

THE BIGGEST IDEAS IN THE UNIVERSE

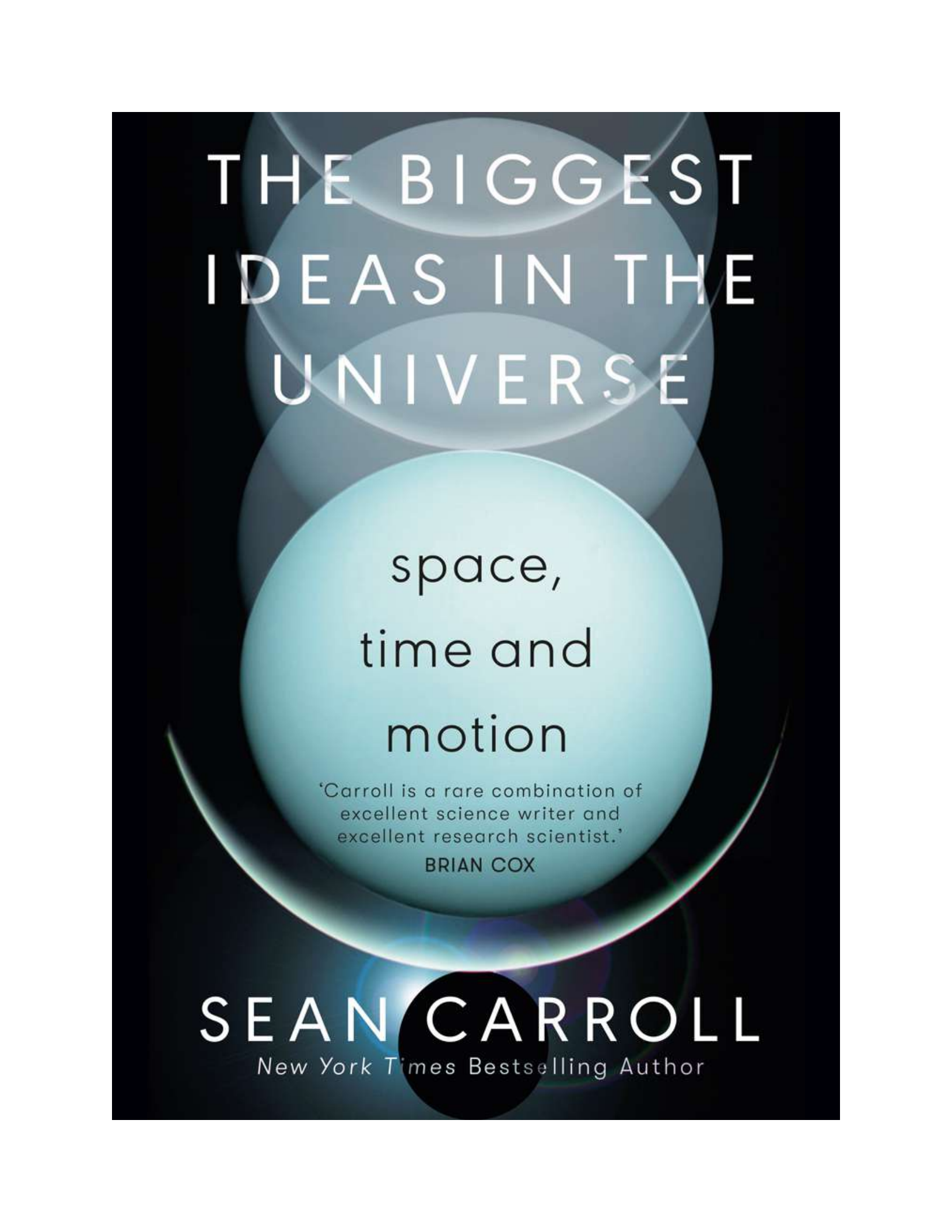
space,
time and
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Praise for Sean Carroll

‘As a ten-year-old physics enthusiast, I would have loved *The Biggest Ideas in the Universe*. With this book, Sean Carroll rejects traditional elitism in physics and welcomes in anyone who knows only a little algebra but wants to understand the whole universe.’

Chanda Prescod-Weinstein, author of *The Disordered Cosmos: A Journey into Dark Matter, Spacetime, and Dreams Deferred*

‘Sean Carroll is a wizard of empathy. In this short book, the first of three on *The Biggest Ideas in the Universe*, he anticipates what’s always confused you about physics and then gently guides you to enlightenment... and ultimately, to newfound wonder.’

Steven Strogatz, author of *The Joy of X* and *Infinite Powers*

‘No-nonsense, not-dumbed-down explanations of basic laws of the universe that reward close attention.’

Kirkus

‘Sean Carroll’s greatest gift isn’t that he’s an expert on the fundamentals of physics, which he is, but that he never speaks down to his reader. He assumes that anyone, even the uninitiated, can learn to understand the formulae that underlie complicated concepts like space and time. It is a pleasure to read his work, a greater pleasure still to get a world-class education from such a witty, thoughtful teacher.’

Annalee Newitz, author of *The Future of Another Timeline*

‘Carroll has the remarkable ability of putting the reader utterly at ease with his lucid and addictive prose.’

Jim Al-Khalili

‘Sean Carroll is a fantastically erudite and entertaining writer.’

Elizabeth Kolbert

ALSO BY SEAN CARROLL

Something Deeply Hidden

The Big Picture

The Particle at the End of the Universe

From Eternity to Here

THE
BIGGEST
IDEAS IN THE
UNIVERSE

SPACE,
TIME AND
MOTION

SEAN CARROLL



To Jennifer

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INTRODUCTION

My dream is to live in a world where most people have informed views and passionate opinions about modern physics. Where you knock off after a hard day at work, head down to the pub with friends, and argue over your favorite dark-matter candidate, or competing interpretations of quantum mechanics. A world where, as kids are running around at a birthday party, one parent says, “I don’t see why anyone thinks there should be new particles near the electroweak scale,” and another immediately replies, “Then how in the world are you going to address the hierarchy problem?” People have opinions, after all, about supply-side economics or critical race theory. Why not inflationary cosmology and superstring theory?

That’s not quite the world in which we live. Even more than most other academic disciplines, physics is a field by and for specialists. Practitioners talk to one another in a highly specialized jargon, one that is dominated by mathematical concepts most people have never heard of, much less mastered. There are sensible reasons why this is the case, but it doesn’t have to be this way. The situation is due in large part to the ways in which physicists tend to share their knowledge with the rest of the world.

If you are a non-expert interested in learning about modern physics, you have basically two options. One is to remain at a popular level of

explanation, where you can learn about some of the relevant concepts without digging into the technical or mathematical details. You can read books, go to lectures, watch videos, listen to podcasts. The good news is that we do have a vibrant ecosystem of such resources, and it's possible to learn quite a bit, albeit in a somewhat haphazard way. But at the end, you know you're not getting the *real* stuff. What you get are images and metaphors, rough translations of the underlying mathematical essence into ordinary language. You can go an impressive distance down this route, but something vital will always be missing.

The other route is to become a physics student. That could be literally at a university, or by assembling the right textbooks and online resources. Along the way you will need to become proficient at quite a bit of mathematics: calculus and differential equations most importantly, but also aspects of vector analysis, complex numbers, linear algebra, and more. The journey will be rewarding, but frustratingly slow. It typically takes at least a year of introductory courses before a student ever hears about relativity or quantum mechanics. And most physics students can get an undergraduate degree—or even go all the way to obtain a PhD—without learning about particle physics, black holes, or cosmology. Those goodies are reserved only for specialists in particular subfields.

The gap between learning physics as an interested amateur, relying on metaphors and murky translations, and becoming a credentialed expert, comfortable with pushing around equations of intimidating complexity, is wide but not unpassable. Just because I don't want to be a professional race-car driver doesn't mean I shouldn't be allowed to drive at all. Surely there is a way to engage with some of the authentic essence of modern physics—even if that means looking at a few equations—without slogging through years of a standard curriculum.

You've come to the right place!

The Biggest Ideas in the Universe is dedicated to the idea that it is possible to learn about modern physics for real, equations and all, even if you are more amateur than professional and have every intention of staying that way. It is meant for people who have no more mathematical experience than high school algebra, but are willing to look at an equation and think about what it means. If you're willing to do that bit of thinking, a new world opens up.

Here is the thing about equations: They are not that scary. They are just a way to compactly summarize a relationship between different quantities. It's one thing to be told that, according to Einstein's theory of general relativity, "mass and energy cause spacetime to curve." It is quite another to be given Einstein's equation:

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} = 8\pi GT_{\mu\nu}.$$

The English-language sentence gives you a kind of feeling for what general relativity is about, but the equation tells you what is really going on, in precise and unambiguous terms. You can read all of the words you like, but until you understand this equation, you won't really understand Einstein's theory.

The problem is that this equation is utterly opaque if you don't know what the symbols mean. It's gibberish. To wrap your head around it, you need to understand the individual roles of all the numbers and letters, including the subscripts μ and ν , which are from the Greek alphabet, for goodness' sake. There are good reasons why typical physics students take years to make it that far.

But you will get that far by reading this book. By the time you reach [Chapter 8](#), you will understand what all the symbols in Einstein's equation mean, how they fit together, and what they are telling us about spacetime and gravity. The equation might involve Greek letters, but coming to understand it is enormously easier than, say, learning to speak and write actual Greek.

Most popular books assume that you don't want to make the effort to follow the equations. Textbooks, on the other hand, assume that you don't want to just understand the equations, you want to *solve* them. And solving these equations is enormously more work and requires enormously more practice and learning than "merely" understanding them does.

Let me elaborate on this solving/understanding distinction, because it will be the key to the remarkably fast progress we'll be able to make. Einstein's equation doesn't just relate some specific collection of mass and energy to the curvature of some specific spacetime. It is a completely general relationship, of the form "you give me some distribution of mass and energy, and I will tell you how spacetime curves in response to that." Carrying out this promise is what we mean by "solving the equation."

Sometimes solving an equation is easy: If the equation is $x = y^2$, and we're told that $y = 2$, the solution is $x = 4$. Not so hard. But real-world physics equations are more complicated than that, involving ideas from calculus (the mathematics of continuous change) and other advanced concepts. Solving such equations can become a full-time occupation for working physicists. Therefore, sensibly enough, their education consists in large part in learning to solve equations. Any physics student will tell you that the difficult part of their years in school isn't going to the lectures, it's doing the problem sets that professors keep handing out as if the students have nothing else to do that weekend.

Here in *The Biggest Ideas in the Universe*, we're not going to teach you how to solve the equations. But you will learn to *understand* the equations, even ones that are considered relatively advanced by physics-textbook standards. That turns out to be enormously easier. These books are dedicated to the belief that the ideas of modern physics—the real ones, not watered-down metaphorical versions—can be accessible to anyone willing to do just a little bit of thinking about the equations and what they mean.

Okay, but what are these ideas that we're talking about? There are many of them, as you might imagine. Enough that we've divided the material into a three-part series: *Space, Time and Motion*; *Quanta and Fields*; and *Complexity and Emergence*. The trilogy format has proven successful for *The Lord of the Rings* and other popular franchises.

The book you hold in your hands, *Space, Time and Motion*, focuses on the framework of classical physics pioneered by Isaac Newton, which held sway until the quantum revolution of the twentieth century. But do not fear, we will not be spending too much time on pulleys and inclined planes, as

important as those are. The ambit of classical physics includes deep questions about the nature of space, time, and change, and we won't be afraid to sprinkle some philosophical considerations in among our equations. It also includes the theory of relativity, all the way up to Einstein's ideas about curved spacetime, and consequences such as black holes. So this book starts with ideas that are centuries old but will take us right up to modern research-level concepts.

In *Quanta and Fields* we will discuss sexy quantum ideas like entanglement and Schrödinger's cat, but mostly we will take the opportunity to learn about quantum field theory and particle physics, the best modern take on the fundamental laws of nature. The final installment, *Complexity and Emergence*, is where we admit that the world isn't made of just two or three particles. Interesting things happen when systems consist of a large number of moving parts.

That's a lot of concepts. And yet, almost all of them are within the realm of physics and related areas. This is not to disparage the equally big and important ideas from other areas of science (or the arts and humanities, for that matter), but one has to draw the line somewhere.

Another place we've drawn the line is between "ideas we have good reason to believe are true" and "promising speculations." While physics textbooks tend to stick to ideas that have established their usefulness, popular-level treatments will cheerfully dive into concepts that are still entirely hypothetical. That's a perfectly sensible thing to do; researchers spend most of their time at the frontier, thinking about possibilities that haven't become part of settled lore. Our goal here is to stick to ideas that we have excellent reason to think will still be part of the working physicist's tool kit a hundred years from now.

It is a pleasure to acknowledge the enormous help I have received along the way. Scott Aaronson, Justin Clarke-Doane, and Matt Strassler provided invaluable feedback and saved me from more than a few infelicities of expression. Jason Torchinsky made the beautiful illustrations. My editor, Stephen Morrow, was supportive and insightful as always, and my agent, Katinka Matson, helped shape the form of a complicated project. Alice

Dalrymple, Tiffany Estreicher, Dora Mak, Nakeesha Warner, and Melanie Muto were crucial in the production process. The book grew out of a series of videos I made during the COVID-19 pandemic, inspired by online playwriting classes given by my friend Lauren Gunderson. And of course I cannot properly express my gratitude to Jennifer Ouellette for writing advice, moral support, and more.

To see the videos, as well as find other supplementary materials, visit:

<https://preposterousuniverse.com/biggestideas/>

ONE

CONSERVATION

Look around. If you're like most people, you have a body. It's located somewhere. Chances are that you are surrounded by a variety of other objects, located other places. Tables, chairs, a floor, ceiling, walls, maybe trees or a body of water if you're outside. All of these objects exist, with certain locations and properties, and those locations and properties can change with time. You can scoot your chair nearer to a wall, or farther away. You drink a glass of water, absorbing its substance into your body. If instead you put the glass on a table and leave it there, the water will eventually evaporate into the air.

That's how we think about the world from an immediate, human-scale perspective. There is stuff, which is located in space. (By "space" we don't mean "outer space," just the three-dimensional realm through which things move.) This stuff might change, or it might remain constant over time. Physics is the study of all that stuff, and its behavior, at the most basic level we can think of. What is all that stuff, really? How do different objects relate to one another? How do they change with time? What is "time," and for that matter what is "space," when you get right down to it?

One of the most enjoyable features of physics is how quickly we go from mundane observations—look at that stuff, behaving in that way!—to profound questions about the nature of reality. The key is that things don't just happen—all of the happenings fit into certain *patterns*. It's those patterns that we call the **laws of physics**, and our job is to uncover them.

The simplest pattern of all is the fact that certain things remain constant even as time passes. Contemplating that basic feature of reality is a great

jumping-off point for our investigations, which will get pretty wild soon enough.

PREDICTABILITY

We take for granted that the world around us is at least a little bit predictable. If there is a table in a room, and we turn to face away from it for just a second, we expect the table to still be there when we turn back. If we place an apple on the table, we expect the table to support it, rather than the apple falling right through to the floor. As much as we might lament how difficult it is to predict the weather or future election outcomes, we should be impressed by how much reliable predictability there is.

Physics is made possible by this predictability. It may not be absolute, but we can somewhat anticipate what's going to come next in the world if we know what's going on right now. The most basic kind of predictability is **conservation**, the fact that some things don't change at all.

Conservation is just how physicists refer to “staying constant over time.” You may have heard that **energy** is conserved, for example. Energy isn't a kind of substance, like water or dirt. It's a *property* that things have, depending on what they are and what kind of situation they're in. There is no “energy fluid” that flows from place to place. There are simply objects that have positions and velocities and other properties, and we can associate a certain amount of energy with them because of those facts.

An object can have energy because it is moving, because it's located at a high elevation, because it's hot, because it's massive, because it's electrically charged, or for other reasons. Under the right circumstances, those forms of energy can be converted back and forth between each other. The energy that a wineglass has just from being located on a table can, if the glass is knocked off the edge, rapidly be converted into energy of motion as it falls, and then into heat and noise and other forms of dissipated energy as it breaks on the floor. Conservation of energy is simply the idea that the total energy, given by adding up all the individual forms, remains constant throughout the whole process.

(Wait—is this circular reasoning? Are we merely inventing a bunch of quantities that add up to a constant number by definition, calling that “energy,” and congratulating ourselves for discovering a law of physics?

No. There is an independent way to define energy and then show that it's conserved, based on the fact that the laws of physics don't themselves change over time. But you're asking the right kind of question.)

As simple an idea as we can imagine—there is a quantity that doesn't change, it stays the same as time passes. But conservation of energy and other quantities isn't just a gentle, unintimidating place from which to launch a survey of all of physics. It's logically the right place, since an understanding of conservation was the first step in the transition from pre-modern to modern science.

FROM NATURES TO PATTERNS

Put yourself in the mindset of humans trying to understand the world before physics in its modern form came along. The Greek philosopher Aristotle is usually chosen as an exemplar, though other ancient thinkers would have thought similarly. To greatly simplify a complex and subtle set of ideas, Aristotle separated the way things move into “natural” and “unnatural” (or “violent”) motions. He thought of the world as fundamentally teleological—oriented toward a future goal. Objects have natural places to be or conditions to be in, and they tend to move to those places. A rock will fall to the ground and sit there; fire will rise to the heavens.

Here on Earth, in Aristotle's view, if everything were in its natural state, things would be motionless. It requires some external influence to get things moving, and even then the motion will only be temporary. You can pick up a rock and throw it; that's an unnatural or violent motion. But eventually the rock will come back down, maybe bounce around a bit, and return to its natural state at rest on the ground.

He's not wrong, at least in a wide variety of circumstances. If you're sitting with a coffee cup on the table in front of you, by itself the cup will just sit there. You can make it move by pushing it, but when you stop pushing, it will come to rest again. We can extrapolate this, Aristotle imagines, to a basic feature of the universe. Objects are naturally at rest, and motion only occurs when something pushes them away from this natural state.



This picture fits less well with other cases that were known even in Aristotle's day. Ancient Greeks were well acquainted with arrows flying through the air. The initial force may be applied by the bowstring, but it's clear that the arrow keeps going long after it has left the bow. Why doesn't the arrow just fall to the ground? What keeps it from expeditiously returning to its natural state?

This was a question that great minds puzzled over for hundreds of years. It took a while, but the answer ultimately led to a wholesale overthrow of Aristotle's teleological view of the universe. It was replaced with a picture in which objects don't evolve toward ultimate goals; instead, they obey laws that predict what will happen the very next moment based on what's happening now.

CONSERVATION OF MOMENTUM

An important step was taken by John Philoponus, an Alexandrian thinker in the sixth century. He suggested that the bowstring imparted a certain quantity, later dubbed "impetus," to the arrow, which kept it moving for a while before eventually dissipating away. A simple suggestion, perhaps, but

an important move from thinking in terms of forward-looking purposes and replacing them with properties that exist in the moment.

Philoponus's idea was developed further by Ibn Sīnā (Avicenna), an eleventh-century Persian polymath. It was Ibn Sīnā who took the crucial step of arguing that impetus is not just temporary. Every object has a certain amount of impetus (equal to zero for a stationary object, some larger number if the object is moving), and that amount remains constant unless a force somehow pushes on it.

In this new picture, the reason why rocks and coffee cups come to rest is not because that's their natural state; it's because forces—friction, air resistance—gradually degrade the impetus from the body. In the vacuum of empty space, Ibn Sīnā suggested, there would be no air resistance, and a moving body would keep moving at a constant velocity in perpetuity. This was a wildly speculative thought experiment one thousand years ago, but today we regularly build spacecraft that move between the planets at basically a constant velocity (apart from the gentle tug of gravity). In the fourteenth century, French philosopher Jean Buridan proposed a mathematical formula for the impetus, equating it to the weight of an object times its speed.

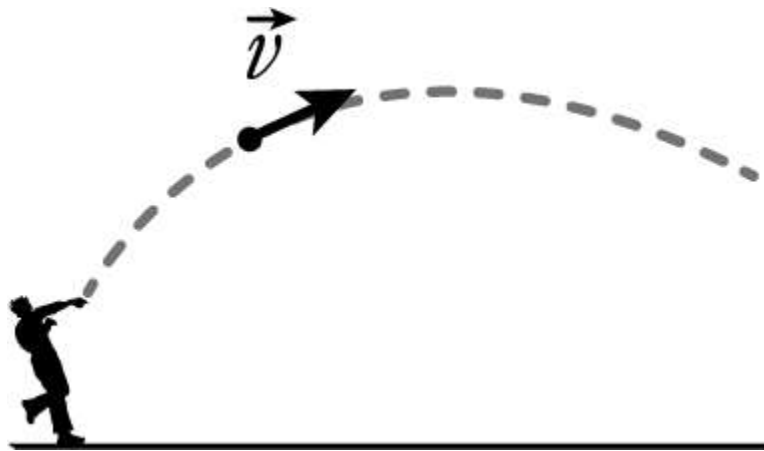
What we have here is the birth of a law of physics: **conservation of momentum**. The rough idea of some “quantity of motion” being conserved came along before anyone could pinpoint precisely what that quantity was. This is a standard story of progress in theoretical physics: We put forward a new concept, work to characterize it in quantitative terms, then take that quantitative expression—an equation—and ask how it comports with other phenomena we observe in the world. Today we know that momentum is mass times velocity (at least until relativity comes along and complicates things a bit).

One problem with Buridan's definition of impetus as “weight times speed” is that “weight” isn't an intrinsic property of an object, because it depends on the amount of gravity pulling on it—your weight would be lower on the moon than it is on Earth, and you would be weightless if you were in a spaceship coasting between the planets. **Mass**, on the other hand, is an intrinsic property; roughly speaking, mass is the resistance that an object has to being accelerated. It takes a lot of force to accelerate a high-

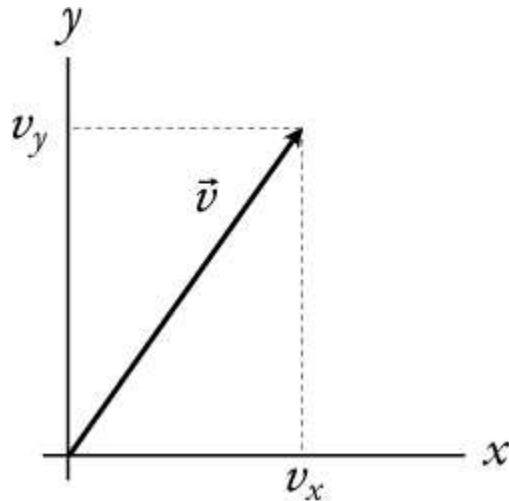
mass object to a certain speed, and only a little force to accelerate a low-mass object to that speed.

Similarly, **speed** and **velocity** are subtly different. Speed is a number, a certain number of meters per second. Whereas velocity is a **vector**—a quantity with both a magnitude and a direction. In fact, the magnitude of the velocity vector is precisely what we call “speed,” but the velocity also points in some specified direction. So you have the same speed if you’re driving north at 90 km/hour as you do if you’re driving south at 90 km/hour, but your velocity is different.

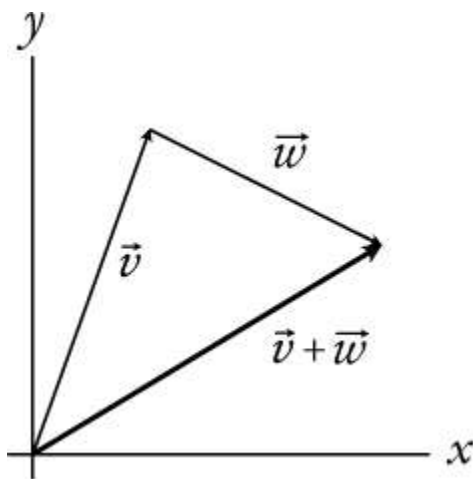
We denote vectors by drawing little arrows over an appropriate symbol, so the velocity of an object is typically written $\vec{v}$. We very often care about the size, or magnitude, of a vector, which is written with the same symbol but without the arrow: The magnitude of a vector $\vec{v}$ is simply v .



The arrow notation makes sense because we often represent a vectorial quantity by literally drawing an arrow that points in the direction of the vector, and whose length is proportional to the magnitude of the vector. Alternatively, we can represent a vector in terms of its **components**—the contributions it gets from different directions. If you are traveling exactly northward, the component of your velocity in the east/west direction is zero.



It is easy to add vectors together. Just imagine placing the beginning of the second vector at the end of the first, so we define a third resulting vector by traveling down the first and then the second. If the two vectors we're adding together point (almost) along the same direction, the total vector will be (almost) as long as the sum of their magnitudes, but if they point in (almost) opposite directions, the resulting vector can be much shorter.



Buridan and his predecessors didn't think in terms of vectors, which were gradually developed by a number of thinkers in the nineteenth century, including German mathematician August Ferdinand Möbius (of "Möbius strip" fame); Irish mathematician William Rowan Hamilton; German polymath Hermann Grassmann; and English mathematician Oliver

Heaviside. So it's no surprise that it took a while to get the right definition of momentum.

These days the momentum vector is usually denoted $\vec{p}$. (The letter m is reserved for mass, so we take the symbol from the Latin word for momentum, *petere*.) With all that in mind, the expression for momentum is the simplest thing in the world:

$$\vec{p} = m\vec{v}.$$

(1.1)

Our first official equation. The momentum vector points in the same direction as the velocity vector, and their magnitudes are proportional. **Proportionality** will be a crucial concept for us: It means that a multiplicative change in one quantity implies a multiplicative change in the other. If you double the velocity, you double the momentum. The factor relating the two is called the “constant of proportionality,” although in some equations it might not actually be constant. In this case it is: It's just the mass of the object.

The power of even a basic equation like this should be evident. We're not saying that the momentum of some particular object just happens to be equal to its mass times its velocity; we're saying that there is a *universal* relationship between momentum, mass, and velocity, which always takes precisely this form for every object. When relativity comes along, some of the explicit forms of the equations we'll see here are going to have to be tweaked, but the basic principles are largely the same.

An equation like this has no “causality” built into it; it's a rigid relationship between the quantities involved, and it reads equally well left-to-right or right-to-left. We can manipulate the equation in any way that does the same operation to both sides, such as dividing by m to get $\vec{p}/m = \vec{v}$. We can therefore say, “If I know the velocity of an object, I multiply by its mass to get the momentum,” or equally well, “If I know the momentum of an object, I divide by its mass to get the velocity.”

BUMPS AND PUSHES

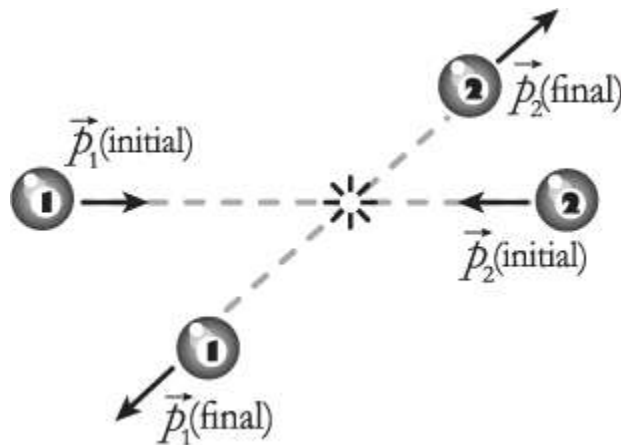
The power of the law of conservation of momentum goes well beyond the idea that a single object with no forces acting on it will keep moving at a constant velocity. When a force does act on an object, for example, by bumping into another object, the total momentum of the entire system remains conserved.

Imagine we have two objects that are moving without any forces acting on them, such as two billiard balls on a frictionless table. (A puck on an air-hockey table is slightly more realistic, but any invocation of “frictionless” is going to be an idealization, much as physicists love to play that card.) They are initially moving on straight lines, but then they collide and move apart on new straight trajectories.

Let’s label the initial momenta (plural of momentum) of the first ball as $\vec{p}_1(\text{initial})$ and that of the second ball as $\vec{p}_2(\text{initial})$. Following an obvious pattern, we call the final momentum of the first ball $\vec{p}_1(\text{final})$ and that of the second ball $\vec{p}_2(\text{final})$. Then the statement of conservation of momentum in this case is

$$\vec{p}_1(\text{initial}) + \vec{p}_2(\text{initial}) = \vec{p}_1(\text{final}) + \vec{p}_2(\text{final}). \quad (1.2)$$

The individual momenta clearly change as the balls ricochet off of each other. But the total momentum of the system as a whole remains conserved.



Momentum is always conserved, but we can forgive our predecessors for not noticing it right away. Think back to our Aristotelian coffee cup, which is at first motionless, then moves a bit when you push it, then comes to rest again when you stop. It looks like momentum is not conserved, because the cup goes from zero velocity to nonzero velocity. But secretly, the cup is reacting back on you, and your own body is pushing against the chair you are sitting in, which pushes against the Earth itself. The change in momentum of the coffee cup is exactly compensated by a change in momentum in the other direction in the you/chair/Earth system. You never notice, because the mass of all that stuff is so enormously large that the change in velocity is unmeasurably small, though not quite zero. When you stop pushing and the cup comes to a stop, it's because the table it's sitting on has pushed back on it, and this time the table/Earth system gains back a little momentum, returning to where it was before you started pushing anything.

In the film *Gravity*, there is a scene where Sandra Bullock and George Clooney are in peril, floating in their spacesuits outside a space station. (Spoiler alert for this paragraph and the next.) They are hanging on to the station by a single tether. In an otherwise delightful movie, the physics in this scene gets a bit wonky. What we see is that Bullock has to hold on for dear life as Clooney is being pulled away from her. In reality, since they are all in pretty much the same orbit around the Earth, there would be no forces pulling them away from the station; a gentle tug on the tether would bring them home safely. But in the movie, she has to let go of him to allow herself to return.

I don't object when filmmakers bend the laws of physics a bit in the service of a good story. But in this case, the bending was unnecessary. All you had to do to concoct an equally dramatic scene was to eliminate the tether entirely. Imagine that Bullock and Clooney had been holding on to each other but floating slowly away from the station with nothing connecting them to it at all. Conservation of momentum would tell them exactly what to do. If they stayed together they would have drifted inexorably away, and eventually both would die. But there's another option: One of them could have pushed the other one away. Their total momentum would be unchanged, but one of them could have drifted back toward the station while the other moved away even faster. Clooney could have

sacrificed himself by pushing Bullock back home. Or either Clooney or Bullock could have saved themselves by pushing the other away to an inevitable doom. But that would have been a different movie.

CLASSICAL MECHANICS

Conservation of momentum remains an important physical principle to this day, but the long road to understanding it played an even more important role by introducing a new way of thinking about physics. Gone was the teleological Aristotelian world of intrinsic natures, causes and effects, and motion requiring a mover. What replaced it was a world of patterns, the laws of physics. After some important contributions from people such as René Descartes and Galileo Galilei, the first full-blown system of physical laws was introduced by Isaac Newton in 1687, the theory known as **classical mechanics**.

Pedantic but important aside: modern physicists distinguish between “classical” mechanics, which is a broad framework, and “Newtonian” mechanics, which is one specific model within that framework. Classical mechanics says that the world is made of things with definite, measurable values, obeying deterministic equations of motion; it stands in contrast with quantum mechanics. Newtonian mechanics adds specific ideas about absolute space and time. It stands in contrast with “relativistic” mechanics, which is classical but not Newtonian, and in which space and time become unified. Until we explicitly start talking about relativity, the equations we’ll introduce for things like energy and momentum will be Newtonian. Just to make things one step more complicated, there are theories such as “Lagrangian mechanics” and “Hamiltonian mechanics,” which are mathematically equivalent to Newtonian mechanics but feature different sets of words and concepts. Lagrangian and Hamiltonian mechanics are certainly classical; whether you want to characterize them as Newtonian is a matter of taste.

Classical mechanics is a theory of patterns, rather than natures or cause/effect relations, because it doesn’t ask “What is the natural state of the system?” or “What caused the system to move in that way?” All it asks is “What is the system doing at this particular moment?” And from that it makes a precise prediction for what the system will be doing at any other

moment. The moment could even be in the past, not just the future. Looking back at equation (1.2), conservation of momentum for two particles, the implication works backward in time just as well as forward. If we know the total final momentum, we know it was the same at earlier times.

This is an example of a different, much more grandiose, conservation law: **conservation of information**. This principle was implicit in Newton's laws of classical mechanics, but it wasn't brought out into the limelight until the work of French mathematician Pierre-Simon Laplace around 1814. The state of a classical system at any one time is specified by the positions and velocities of every part of the system, for example, all the planets in the solar system. That amount of information, Laplace pointed out, is preserved over time. From the state at any one moment, you can predict the state at any other moment, future or past. Or at least you could, if you had perfect knowledge of the information and arbitrarily accurate calculational abilities. Laplace imagined a "vast intellect" with such capabilities, but later commentators called this hypothetical being Laplace's Demon. The point of the Laplace's Demon thought experiment is not that anyone could actually have such information and make such predictions, in a practical sense, nor that we should aspire to do so. There's no way any realistic being could know the positions and velocities of every atom in a grain of sand, much less in the universe. But the universe itself possesses that information, and the laws of classical mechanics predict that it is conserved over time.

CONSERVATION OF ENERGY

Then we have **conservation of energy**, one of the most well-known features of classical mechanics and also an interesting example of the development of physical ideas. Unlike momentum, which is a vector, the energy of an object is simply a number, a quantity with magnitude but no direction. (Numbers are sometimes called "scalars" when we want to specifically distinguish them from vectors or more complicated quantities.) Energy comes in a number of forms, but there is one kind—**kinetic energy**, the energy of motion—that is related to momentum. The formula* for the kinetic energy of an object of mass m and speed v is

$$E_{\text{kinetic}} = \frac{1}{2}mv^2.$$

(1.3)

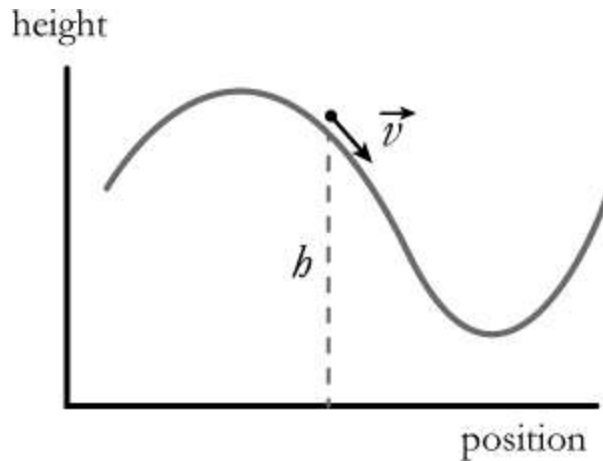
Both momentum and energy are conserved in classical mechanics, but kinetic energy by itself is not, since it can be converted into (or created from) other kinds of energy. When you shoot an arrow from a bow, the energy that was tied up in the stretching of the bowstring is converted into the kinetic energy of the arrow.

In simple circumstances, we can directly track how energy transforms from one form to another. Physicists like to think about a ball rolling on a hill, where we imagine there is no friction or air resistance. Then there is **potential energy** associated with the elevation of the ball on the hill, in addition to the kinetic energy. The formula for potential energy of a ball at elevation h is

$$E_{\text{potential}} = mgh.$$

(1.4)

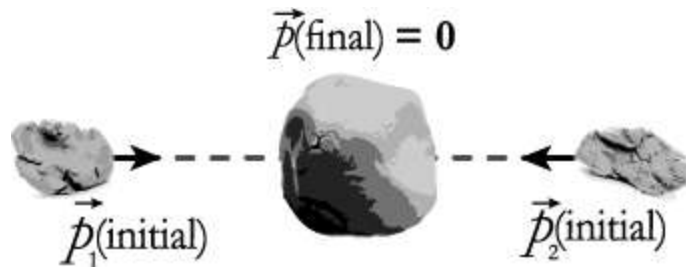
Here, m is the mass of the ball, and g is the acceleration due to gravity near the surface of the Earth. (Feel free to substitute in the appropriate value for the acceleration if you're doing the experiment on some other planet.) Numerically, $g = 98$. (meters/second)/second—a dropped object (ignoring air resistance) increases its downward speed by 9.8 meters/second every second. That's what the acceleration would be if there were no hill at all.



Rolling on a frictionless hill, the total energy $E_{\text{kinetic}} + E_{\text{potential}}$ remains constant, but the two forms of energy convert back and forth. If the ball starts motionless on a slope, it will start rolling downward, and at every moment its velocity will be exactly what is required to produce an amount of kinetic energy equal to whatever it has lost in potential energy.

It's easy to see potential and kinetic energy being converted back and forth into each other, but other forms of energy are harder to discern. We previously talked about the example of colliding billiard balls scattering off each other—in particular, “physicists’ billiard balls,” which move on a completely frictionless surface and create no sound or heat when they collide. In that case, both momentum and kinetic energy are conserved. At this point you may be getting flashbacks from a high school or college physics class. When both quantities are conserved, we are dealing with **elastic** collisions, since the objects involved simply bounce off of each other.

But there are also **inelastic** collisions, where momentum is conserved but kinetic energy transforms into some other form. Imagine that instead of billiard balls, we smashed together lumps of clay, which each begin with an opposite amount of momentum, $\vec{p}_1(\text{initial}) = -\vec{p}_2(\text{initial})$. Rather than ricocheting off, the two lumps deform a bit and stick together. Momentum is still conserved, but kinetic energy by itself is not. It has been converted into heat and stress inside the lump of clay.



Early thinkers, including Newton himself, didn't quite appreciate that momentum and energy were two separate things; they thought in terms of a single "quantity of motion." In the context of Newtonian mechanics, where constant straight-line motion for unforced bodies is a fundamental principle, momentum is an obvious thing to define. Kinetic energy was more subtle, although thinkers such as Gottfried Wilhelm Leibniz (Newton's rival for the invention of calculus) argued that the central quantity in the study of motion was "vis viva," which he defined as mv^2 .

The situation was ultimately clarified by French philosopher and physicist Émilie du Châtelet. She had translated Newton's work into French and appreciated the conservation of momentum but argued that energy was a distinct conserved quantity. As evidence, she performed an experiment originated by Dutch physicist Willem's Gravesande, in which heavy balls were dropped into soft clay. The momentum of the ball is transferred to the Earth as a whole, but its kinetic energy goes into creating a depression in the ground. The amount of clay displaced was found to be proportional to the square of the speed at impact, exactly what we expect from the formula for kinetic energy.

You may have heard that there is a law of "conservation of mass," but that hasn't been strictly true since the theory of relativity came on the scene. Under relativity, energy and momentum are both conserved (though the equations for them are slightly different from what we wrote above), but mass is just a particular kind of energy. That's the meaning of Einstein's famous equation: The energy of an object at rest (that is, with zero kinetic energy) is just its mass times the speed of light squared,

$$E_{\text{rest}} = mc^2 \quad (1.5)$$

In ordinary circumstances conservation of mass is a pretty good approximation, but in particle physics, where particles are routinely moving close to the speed of light, it's no longer useful, and we should just think of conservation of energy.*

WHY ARE THERE CONSERVATION LAWS?

Scientists delight in asking “Why?” questions. We want to know why apples fall from trees, why coffee and cream mix but never unmix, why a fire goes out if you deprive it of oxygen. But it's a tricky business. We have to face up to the possibility that our “Why?” questions bottom out with some ultimate answers, with nowhere further to go than “That's just the way it is.”

Happily, when it comes to conservation laws we can do a bit better than that. It wasn't until the early twentieth century, but German mathematician Emmy Noether* eventually proved a remarkable theorem relating conservation laws to **symmetries** of the laws of nature. The basic idea is straightforward: A symmetry is a transformation you can do to a system that leaves its essential features unchanged. A circle has a symmetry according to which it can be rotated by any angle around its center; a square, by contrast, is symmetric under rotations by 90 degrees or any multiple thereof.

Noether's theorem states that every smooth, continuous symmetry transformation of a system is associated with the conservation of some quantity. For example, the laws of physics overall are symmetric under shifts in space (we can pick the system up and move it somewhere else) and also under shifts in time (we can do an experiment, wait a little while, and do it again). In either case we should get the same answer before and after the shift. Noether's theorem relates these symmetries to conservation laws we already know: Invariance under spatial shifts leads to conservation of momentum, and invariance under temporal shifts leads to conservation of energy. The number of different symmetries works out. There is one dimension of time, and correspondingly a single conserved quantity: energy. But there are three dimensions of space, and we can translate separately in any one of those three directions. That's why momentum is a vector, which we can think of as having three components, one for each

direction of space. There is also a symmetry according to which we can rotate the system around any of three independent axes; that gives rise to another conserved quantity: **angular momentum**.

Symmetry	Conserved Quantity
Temporal shifts	Energy
Spatial shifts	Momentum
Rotations	Angular Momentum

These symmetries—shifts in space, shifts in time, rotations—are all **spacetime symmetries**, since they involve transforming the system in space and/or time. In particle physics and quantum field theory we have **internal symmetries** that “rotate” different parts of a quantum field into one another. It’s these internal symmetries that are responsible for conservation of electric charge and a number of other particle properties.

A subtlety arises when we remember that the laws of physics exhibit a certain symmetry, but that symmetry might be violated by the actual situation we find ourselves in. For example, our universe is expanding; faraway galaxies are gradually moving away from one another as time passes. Consequently, there is a sense in which energy is not conserved in an expanding universe. The configuration of our universe isn’t invariant under time shifts; things used to be closer together, and in the future they’ll be farther apart. If we simply take the energy contained in all the different forms of matter that we know about (radiation, ordinary matter, dark matter, dark energy, what have you) and add it all together, we get a number that is *not* constant over time. There are ways to try to fix this by defining an energy in the curvature of spacetime itself, but those ways aren’t completely satisfying. There’s nothing wrong with defining “the total energy contained in a region of space” as “the sum of the energies of all the things within that region,” and admitting that this number changes over time.

All of which is to say: conservation laws are tricky. It’s best to keep our wits about us. That’s probably a lesson of broader applicability as we work our way deeper into the biggest ideas in the universe.

SPHERICAL-COW PHILOSOPHY

Conservation laws are obviously both conceptually important and practically useful. But there is another reason why they, and conservation of momentum in particular, are an appropriate starting point for an exploration of the physical world: They illustrate a basic methodological principle, the **spherical-cow philosophy**.

The name comes from a joke that physicists like to tell about themselves: A dairy farmer is struggling with milk output at the farm and decides to ask a scientist at the local university for help. For reasons that remain unexplained, they consult with a theoretical physicist. The physicist goes off to do some complicated calculations and returns with an impressive-looking stack of equations. “I’ve solved your problem, I think,” says the physicist. “What is it?” replies the farmer excitedly. “Well, first assume a spherical cow . . .”



The humor value, in case it's not immediately obvious, lies in the fact that not only are cows not spherical but also that their non-spherical nature is crucial to what it means to be a cow. A spherical cow wouldn't be a cow at all. Making that assumption might simplify the calculations a physicist might want to do, but in doing so it removes us entirely from the realm of insights that would actually be useful to the dairy farmer.

The joke is famous not because it's side-splittingly funny—nobody ever claimed that—but because the equivalent of “assume a spherical cow” actually *does* work in physics, and it works incredibly well. It's an example of a general principle—namely, idealize a difficult problem down to a simple one by ignoring as many complications as you can. Get an answer to the simple problem. Then put the complications back in and calculate how they affect the answer to the simple problem.

This way of thinking is how we invented conservation of momentum. Aristotle wasn't wrong; coffee cups don't start moving by themselves, and if you push them for a while and then stop, they'll quickly come back to rest. But Ibn Sīnā wasn't wrong either; the cup comes to rest because of friction, not because of its intrinsic nature. If we can ignore friction and imagine an arrow flying through vacuum, it would continue moving at a constant velocity. *That's* the starting point for a useful physical analysis; we can always add the complications of friction back in later.

The master of this kind of reasoning was Galileo. He had a genius for figuring out what things were essential and what could be ignored at a first pass. Aristotle had claimed that heavier objects fell faster than lighter ones. Again, not wrong; drop a book and a single piece of paper at the same time, and see what your experimental results reveal. But Galileo argued that if there were no air resistance, they would fall at the same rate. That's an experiment no person could actually perform until centuries later, but Galileo was able to construct ingenious experimental setups that were able to establish the underlying principle.

We will see the spherical-cow philosophy at work again and again. But as useful as it is, it's not a universal truth-finding method. It doesn't work that well in dairy farming, for example. In many complex systems, such as we often encounter in the macroscopic human-scale world, different aspects of the underlying situation interact in crucial ways with one another, such that you can't just ignore them one at a time and correct for their effects later. In fields like biology or economics, everything often depends on everything else.

The reason why physics *seems* so hard is because it actually *is* quite easy, compared to other sciences. In physics (at least in some parts) we have this miraculous ability to set aside various components of the system we're thinking about, solve a much simpler problem, and put everything back

together at the end. That makes our lives enormously easier than they otherwise would have been. As a result, physicists are able to discover amazing and counterintuitive features of the world, from quantum mechanics to relativity to the Big Bang. We would never have been able to just guess these things by being clever; we were forced to invent them by trying to fit the experimental data. But precisely because they are so counterintuitive, they can be hard to understand, at least at first glance. If the vista before us seems alien, it is because we are looking so very far.

* Why the $\frac{1}{2}$? There is a reason, but it requires calculus to explain, and we haven't gotten there yet. For future reference: when we push on an object, the accumulated energy is the integral of the force as distance changes. Newton's second law equates force to mass times acceleration. Acceleration is the derivative of velocity with respect to time. So the integral of acceleration over distance equals the integral of velocity as the velocity itself changes. And $\int mv \, dv = \frac{1}{2}mv^2$. Perhaps none of that makes sense now, but just you wait.

* You will also sometimes hear talk of "relativistic mass," which grows with velocity. That's confusing and unnecessary; it's better just to take the mass of an object as a fixed quantity and let the energy depend on velocity.

* German vowels with an umlaut, such as ö, are often Anglicized to "oe." You will sometimes see the last name of Erwin Schrödinger, for example, written as "Schroedinger." You might therefore think that Emmy Noether's last name was really "Nöther," but that's not the case; she really did spell it "Noether." Johann Wolfgang von Goethe is a similar case.

TWO

CHANGE

Physics is made possible by the fact that the world exhibits a certain amount of continuity and predictability. But it would be a boring world indeed if all the things around us simply stayed the same from moment to moment. Happily, they don't. Planets and stars move through space, people commute to work or fly home for the holidays, individual atoms zip around inside your body and elsewhere. We need to turn our attention to understanding this behavior as best we can.

In classical physics, change is described using a specific framework we will call the **Laplacian paradigm**, after Pierre-Simon Laplace. The Laplace's Demon thought experiment illustrated conservation of information: The data needed to predict the future or retrodict the past is present at any moment in the history of an isolated system. This suggests the following paradigm for understanding how things change:

- Specify the complete state of the system at one moment in time.
- Use the laws of physics to calculate what the state will be just one moment later (or earlier).
- Use the laws of physics again, to evolve from that new moment to the next one.
- Repeat.

This algorithm allows us to build up the entire history of the system, past, present, and future. There is no reference to natures or purposes or goals

toward which the system aspires. It's just one thing after another, where the next thing is determined by the current thing and the laws of physics.

But what in the world does it mean to say “just one moment later”? What is a “moment” supposed to denote here? A second? A millionth of a second? It seems a bit arbitrary.

Presumably what we want to do is to break time down into its smallest possible unit. But time seems to flow smoothly, whether from ordinary experience or from the perspective of modern physics. The continuity of time was recognized as puzzling even by the ancients, from Zeno of Elea (of “Zeno’s paradoxes” fame) to Archimedes. The puzzle wasn’t really resolved until Isaac Newton and Gottfried Wilhelm Leibniz independently developed **calculus**, the mathematical technique for dealing with infinitesimal quantities. So put aside any fears you may have acquired in high school or college; we’re going to have to learn some calculus in this chapter.

The good news is that the basic concepts are easier to grasp than you might have been led to believe. There are only two of them, in fact: using “derivatives” to calculate the rate of change of something, and “integrals” to calculate the total amount of change.

(There is no bad news.)

PLANETS AND FORCES

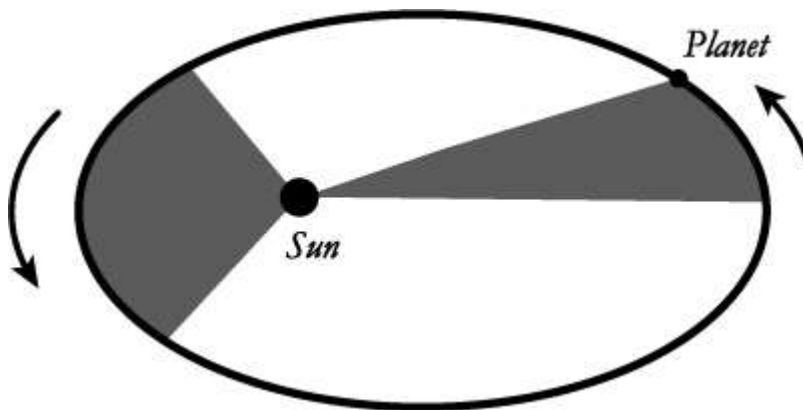
To work our way into understanding the Laplacian paradigm for describing change, it’s useful to contemplate the alternative. An example is provided by the motion of planets in the solar system, which has historically been a fruitful source of physical insight.

Most of us know the story of Ptolemy and Copernicus. Ptolemy, an Alexandrian astronomer of the second century, developed a geocentric (Earth-centered) model of the solar system that remained the state of the art for over a millennium. Copernicus, a Polish astronomer of the sixteenth century, put forward an alternative, heliocentric (sun-centered) model. This upset a number of people who preferred to think of themselves as living in the center of things. But both Ptolemy and Copernicus based their models on the geometry of circles, and as a result both needed to be wickedly complicated in order to fit the known astronomical observations. To model

planetary orbits using nothing but circles, the orbits had to be individually offset rather than sharing a common center, and the planets didn't directly move on the main circles themselves, but rather on smaller circular epicycles centered on the main circles.

The situation was greatly simplified by seventeenth-century German astronomer Johannes Kepler. He accepted Copernicus's displacement of the Earth in favor of the sun at the center of the solar system, but Kepler's true outside-the-box insight was that, as awesome as circles undoubtedly are, there are other shapes we might contemplate for planetary orbits. He suggested that the orbits are **ellipses**, and in one fell swoop eliminated the need for epicycles and related complications entirely. On the basis of data that had been painstakingly collected by his mentor, Tycho Brahe, Kepler put forward three laws of planetary motion:

1. Planets move on ellipses with the sun at one focus of the ellipse.
2. The orbit of a planet sweeps out equal areas in equal times. Thus, planets move more quickly when they are closer to the sun, more slowly when they are farther away.
3. Larger orbits have a longer orbital period. In particular, the square of the period is proportional to the cube of the long axis of the ellipse. This relates the orbits of different planets to one another.



Kepler's laws represented an enormous step forward in our understanding of planetary dynamics. But as with any such advance, new questions instantly arose. *Why* do planetary orbits obey these laws? Is that even a sensible question to ask?

These and related questions preoccupied some of the best minds in the world at the end of the seventeenth century, the dawn of the Age of Reason. Inspired by work of Galileo and Descartes, natural philosophers trained their sights on the field of **mechanics**—the general study of motion and how it is produced. With the new understanding that momentum is conserved and straight-line constant motion was a natural state of affairs, it was important to understand why objects would ever deviate from straight lines. The obvious answer was that they were acted on by some kind of **force**, but at first it was somewhat obscure what counted as a force and how forces actually operated. It's not that different from Aristotle's concept of violent or unnatural motions, but with a different idea of what constitutes a natural motion—for Aristotle it's natural to be at rest, while in classical mechanics it's natural to move at any constant velocity.

An important step forward was made by Dutch physicist Christiaan Huygens. Imagine tying a rock to a string, then swinging it in a circle. You will feel the rock pulling on the string, and you have to pull back to keep it in circular motion. Huygens derived a formula for the amount of “centripetal force” you needed to exert to make this happen. (He also proposed the wave theory of light, invented the pendulum clock, and discovered Saturn's moon Titan. It was a heady time.) This isn't the same as planets moving around the sun, but the basic similarities were evident.

In England, the Royal Society was founded in 1660, and soon featured such thinkers as experimentalist Robert Hooke, architect Christopher Wren, and young astronomer Edmond Halley, all of whom became friends. Hooke had suggested in a lecture to the society that planetary motions could be explained by a gravitational force, stretching from the sun and decreasing with distance, that gently nudged the planetary trajectories away from straight lines. But Hooke wasn't fully comfortable with mathematics, and he wasn't able to build this idea into a comprehensive system. He would spend time in coffee shops (a popular innovation of the day) discussing the matter with Wren and Halley. By 1684, the friends had come to understand that Huygens's formula for centripetal force could be used to derive

Kepler's third law, if the force of gravity from the sun obeyed an **inverse-square law**: The gravitational attraction decreases as the square of the distance to a planet. A planet that was three times as far away would feel one-ninth of the force. What they weren't able to prove was that an orbit under this kind of influence would actually take the form of an ellipse.

NEWTON AND HIS LAWS

Wren, who perhaps had more cash on hand than the others, from designing St. Paul's Cathedral and other buildings, offered a prize to anyone who could derive the shape of planetary orbits under such an inverse-square law. Even at that time everyone knew that Isaac Newton was the smartest one around, although he mostly kept to himself up in Cambridge. Eventually Halley worked up the courage to pay him a visit. Newton received him graciously, and Halley proposed the question of the shape of orbits subject to an inverse-square force.

Newton instantly replied that it would be an ellipse. Somewhat taken aback, Halley probed further, asking how he could be so sure. "Why," Newton offered, "I have calculated it."

It remains a little unclear precisely how Newton carried out the original calculation. What we know is that Halley prodded him to write something up, which ultimately led to a short paper that Halley presented to the Royal Society. That first publication was lacking in some details, so Halley pressed the great man to flesh things out a bit. Once he set to doing so, Newton couldn't be stopped. Eighteen months later, he had produced *Philosophiae Naturalis Principia Mathematica* (*Mathematical Principles of Natural Philosophy*; usually shortened to "the *Principia*"), arguably the most influential work in modern intellectual history.

The *Principia* not only established the system of classical mechanics that remained unchallenged until the twentieth century. It also proposed the full law of gravitation, derived Kepler's laws from basic principles, and presented the first hints of what we now know as calculus. Newton had developed calculus pretty far, but he was reluctant to deploy it fully in the *Principia*, since the techniques were new and bound to be controversial. As a result, he ended up in a bitter dispute with Leibniz, who developed the ideas independently and whose notation eventually came into common use.

(Newton also ended up in a bitter dispute with Hooke over the inverse-square law. He ended up in a lot of bitter disputes.)

Classical mechanics is a system, not merely a theory of some particular physical phenomenon. It's a comprehensive way of thinking about how the physical world works, one that was almost universally accepted as true until the advent of quantum mechanics. We've seen how a large number of very smart people struggled over the course of hundreds of years to get a grasp of momentum, force, and motion. Newton thought about it carefully and simply presented what seemed to be the right answer. As modern-day cosmologist Rocky Kolb has put it, "To compare the accomplishment of Newton to that of the first manned flight, one would have to imagine Orville and Wilbur Wright pulling up on the sands of Kitty Hawk on December 17, 1903, behind the controls of a modern jetliner and flying off to New York."*

So what did Newton actually say? We'll dig further into classical mechanics in the next chapter, but as far as the motion of the planets is concerned, there are two crucial ideas.

First, if the natural motion of objects is to continue in a straight line at a constant velocity, deviations from that motion can be characterized by the **acceleration** of that body, the rate at which the velocity changes. Like velocity itself, acceleration is going to be a vector, since we can imagine accelerating in different directions. **Newton's second law of motion**, the most famous equation in classical physics, states that the acceleration of an object is proportional to the net force acting on it, with the constant of proportionality provided by the object's mass:

$$\vec{F} = m\vec{a}. \tag{2.1}$$

The first law is that the velocity will be constant when there is no force, and the third law says that bodies act on each other with equal and opposite forces. Often there will be more than one force acting on an object at one time, in which case we simply add up the individual contributions to get the overall force, which is responsible for the acceleration. (Because vectors have a direction as well as a magnitude, two big forces can add up to give a

small net force, if they're pointing in opposite directions or nearly so.) We can divide both sides of (2.1) by m to get the acceleration in terms of the force, $\vec{a} = \vec{F}/m$.

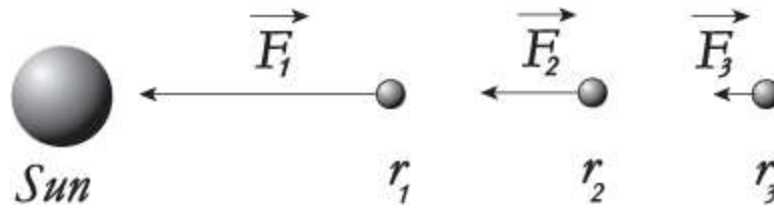
The second idea is **Newton's law of universal gravitation**, the final version of the inverse-square law that Hooke and others had talked about. What was indisputably Newton's was the idea that the law was indeed universal—it explains how apples fall from trees as well as how planets move around the sun. We take this for granted now, but back in the day it was a dramatic leap to connect planetary motion to everyday occurrences in the local orchard.

Consider two celestial objects with masses m_1 and m_2 , and a distance r between them. Let $\vec{e}_r$ be a “unit vector”—a vector of length 1, in whatever units we are using to measure distance—pointing from object 2 to object 1. Then Newton says that the force acting on object 2, due to the gravitational pull of object 1, is given by

$$\vec{F} = G \frac{m_1 m_2}{r^2} \vec{e}_r. \quad (2.2)$$

The number G is a constant of nature, now known as **Newton's gravitational constant**, that tells us how strong the force of gravity is. From the point of view of object 2, object 1 is the **source** of gravity—the physical property creating the force—and vice versa.

This equation looks a bit more elaborate than our previous ones, but if we sit and think about it, we once again see a proportionality relationship between two vectors: the force $\vec{F}$ exerted on object 2 by object 1, and a unit-length vector $\vec{e}_r$ pointing from 2 to 1. The notational complexity simply reflects the fact that the proportionality factor involves Newton's constant as well as the two masses, and then we divide by the square of the distance. This attaches a precise numerical value to the amount of pull that the sun exerts on the planets, which is substantial when you are nearby and fades as you get farther away.



From these two simple rules, the second law of motion (2.1) and the law of universal gravitation (2.2), Newton was able to reproduce all of Kepler's laws, and much more. He showed, for example, that the gravitational force due to a spherical body is exactly the same as it would be if the same amount of mass were concentrated at a single point at the center. So it's okay to treat the sun and planets as if they were single points rather than solid objects, at least in the approximation where we treat them as perfectly spherical. Equally important, we can go beyond the idealization of treating each planet as orbiting the sun in isolation; with Newton's rules in hand, we can ask, for example, about how the orbit of Jupiter (the most massive planet in the solar system) affects the motion of the other planets. It was a whole new way of looking at celestial mechanics, which to this day is more than accurate enough to pilot a rocket ship to the moon.

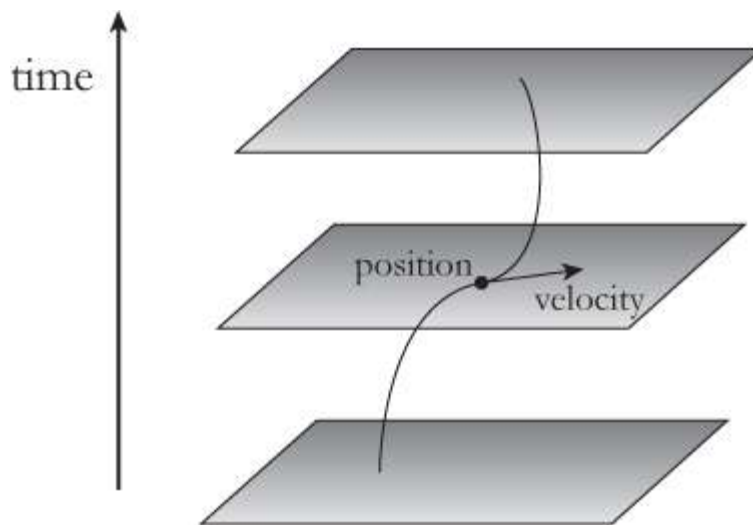
THINK LOCALLY

Our aim here isn't to reproduce Newton's derivation of Kepler's laws, but to highlight the philosophical differences between two approaches to planetary dynamics (and therefore to physics more broadly). Kepler tells us that planets move in ellipses and says certain things about the speed at which they move. To describe an orbit as an ellipse is to make a **global** statement, in the sense that it refers to the trajectory as a whole. We wait for the planet to make one entire revolution around the sun, at which point we can verify that it really did move in an ellipse.

While Newton reaches the same conclusion, his procedure is very different. The starting point is now **local** in time: All of the relevant information is presented at a single moment. You tell me where the planet is, what its velocity is, and what forces are acting on it, all at some particular time. Then Newton's second law tells me the acceleration the

planet is feeling at that same moment in time. From this, we can extrapolate the entire behavior at other times.

That's the Laplacian paradigm in action. Newton developed it, but Laplace emphasized its philosophical significance, and other researchers such as William Rowan Hamilton introduced significant upgrades to the idea. The Laplacian paradigm holds that all the information we need to determine what will happen to the system, or what did happen to it in the past, is contained in the **state** of the system at each moment in time. For a simple system like planets and the sun, the state is simply fixed by the positions and velocities of each component. You might protest that we also need to know the forces acting on the planets, and indeed we do; but those forces are determined by the positions and velocities of the *other* parts of the system. So if you have the positions and velocities of not just one planet but everything in the solar system, you are ready to go.



To complete this program, there are two big things we need to be able to do. First, we keep talking about the **rate of change** of various quantities. Velocity is the rate of change of position; acceleration is the rate of change of velocity. What do we mean by that, and how do we calculate it? If you take a journey from one location to another, you can figure out your *average* speed simply by dividing the total distance traveled by the time you spent traveling. But here we want the **instantaneous** velocity, and likewise the instantaneous acceleration, at each moment of time. That's not

given by dividing any finite distance by any finite time. We'll have to be cleverer.

The other big thing is that, assuming we know the initial position, velocity, and acceleration, we want to build them up to construct the entire journey. In other words, we want to construct the **accumulated** distance traveled from the rate at which we were traveling at each moment. Again, in the simplifying case where we travel at a strictly constant velocity, it would be easy enough to simply multiply velocity by the time of travel to get the distance we traversed. But if we speed up or slow down along the way, or we turn to move in different directions, things are going to get trickier.

These two questions—what is the instantaneous rate of change of some quantity, and how do we accumulate quantities over time?—are precisely the subject of calculus. In maths lingo they are called derivatives and integrals, respectively. Time to roll up our sleeves.

FUNCTIONS

Consider a car traveling along a straight-line road. Its position, velocity, and acceleration are all represented by vectors, but since there's only one direction of motion and therefore only one component of each vector, we can treat them as just numbers (that may be positive or negative). Let's further imagine that the car has an infinitely precise odometer, keeping track of exactly where its position is, and that we somehow record this information at every single moment of time.

Mathematically speaking, what we're in possession of is a **function**: the position of the car, x , as a function of time, t . A function is simply a **map** from one quantity to another quantity: I take some example of the first quantity, hand it over to the function, and it returns a value of the second quantity. The quantities in question might be single numbers, collections of numbers, or something more complicated. The input is called the **argument** of the function, and the output is the value corresponding to that argument.

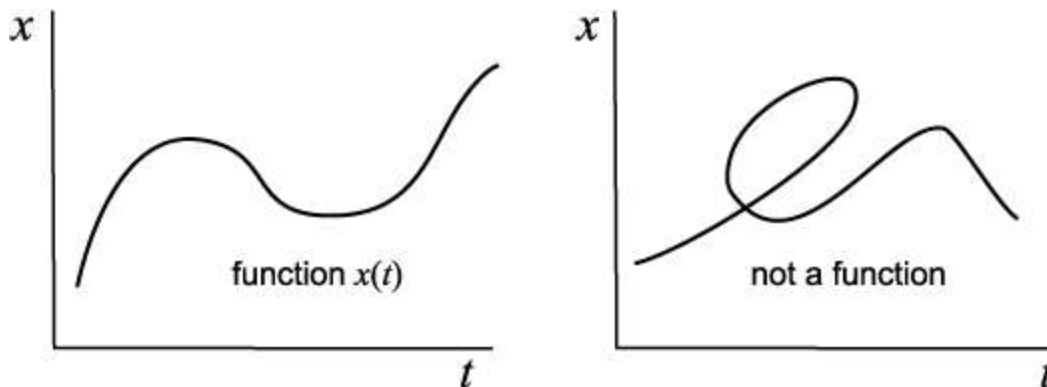
Function: *argument* $\rightarrow$ *value*

$$f: t \rightarrow x$$

A function that maps t to x might be written as $x = f(t)$, or just $x(t)$ for short. The actual letters we use to denote the functions and variables are completely up to us, as long as we remember what they're supposed to mean. If we specify positions in some region of land using coordinates x and y , we might denote the height of the terrain at each position by the function $h(x, y)$. So sometimes a quantity like x might be the argument (input) of a function; other times it might play the role of the value (output).

For our car, the argument is the time variable t , and the relevant function is $x(t)$, the value of the car's position at each time. We can represent it by plotting x as a function of t . You may be familiar with certain special functions, such as t^2 or $\sin(t)$, but the idea of a function applies whenever there is a unique map from values of t to values of x , regardless of whether there is a compact formula for expressing that map.

By “unique map,” we mean that each value of the argument is associated with one and only one value of the function. That value may be repeated for different arguments—our car may pass through some point, back up, and pass through again—but at each t we better have a specific value of x . That means that when we plot a function, the curve may go up and down, but it will never double back from left to right.



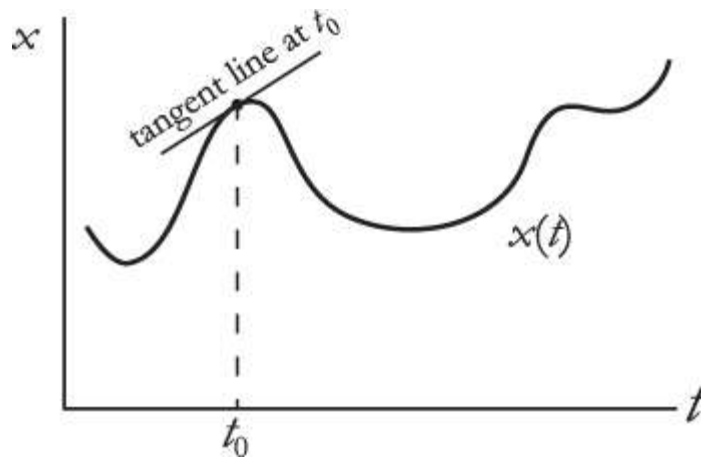
DERIVATIVES

Given $x(t)$, position as a function of time, we might want to ask what the velocity is at any moment. We know that the velocity is defined as the rate at which the position is changing, but how do we calculate it from $x(t)$? Velocity can't be determined from knowing the position at just one time—

given the location of a car and no more information, we have no idea what its speed is. Somehow we need to take advantage of the information about the position at other times.

Just looking at the graph of the function, we get the general impression that the velocity of the car is related to the **slope** of the curve at each point, how sharply it is rising or falling. Where the curve is basically flat, time passes but the car doesn't move very much: The velocity is small. Where the curve is steep, the car moves a lot in just a little time: The velocity is large.

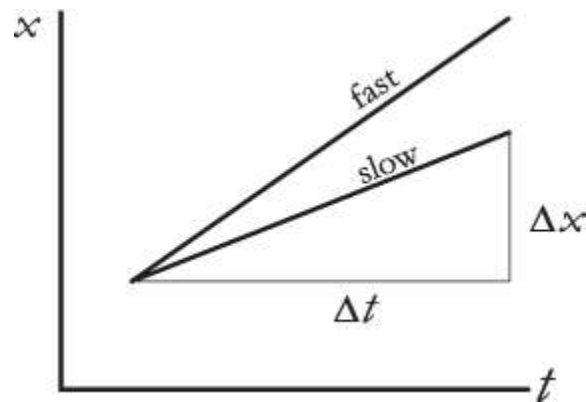
So we want to imagine drawing a straight line that exactly grazes our $x(t)$ curve at some time t_0 , called the **tangent line** at that point. The velocity of the car at the precise moment t_0 is just the slope of that particular tangent line. We need to develop a systematic procedure for defining and calculating the slope of the tangent line at each point.



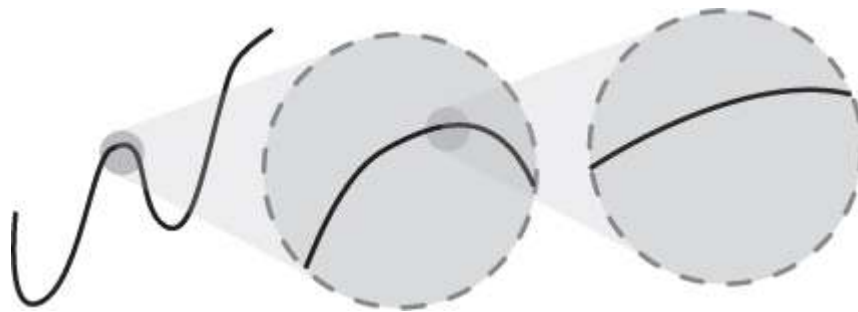
That would be easy to do if the car were moving at a constant velocity. In that case the function would just be a straight line, as in the next figure. Then the slope, and therefore the velocity, is straightforward to calculate: It's just the change in position divided by the corresponding change in time. In symbols, let's write the change in position as Δx and the change in time as Δt . Here Δ is the capital version of the Greek letter Delta, and is often used to represent the amount by which a quantity changes. (The notation Δx represents a single individual quantity, the change in x , not some quantity Δ times the quantity x .) Then the velocity along a straight-line path is

$$v = \frac{\Delta x}{\Delta t}.$$

(2.3)



Now we come to one of the basic insights of calculus. As long as our function is relatively smooth—not overly jagged or randomly jumping from value to value—it will *look* straight over very short intervals, even if overall it's pretty curved. As we zoom in to higher and higher magnifications, a curved line begins to look straighter and straighter.



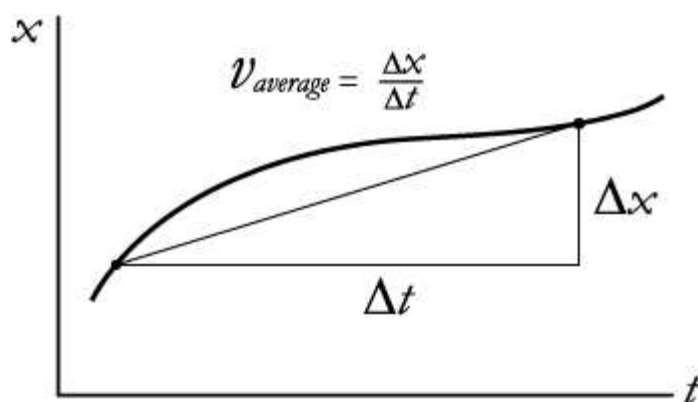
This suggests a strategy. Fix some time t at which we would like to calculate the velocity. Now pick some extra amount of time Δt , and consider the time interval in between an initial time t and a final time $t + \Delta t$. Given our function, we know both the position $x(t)$ of the car at the initial time, and also its position $x(t + \Delta t)$ at the final time. We can therefore calculate the total change in position over this time, which is simply

$$\Delta x = x(t + \Delta t) - x(t). \quad (2.4)$$

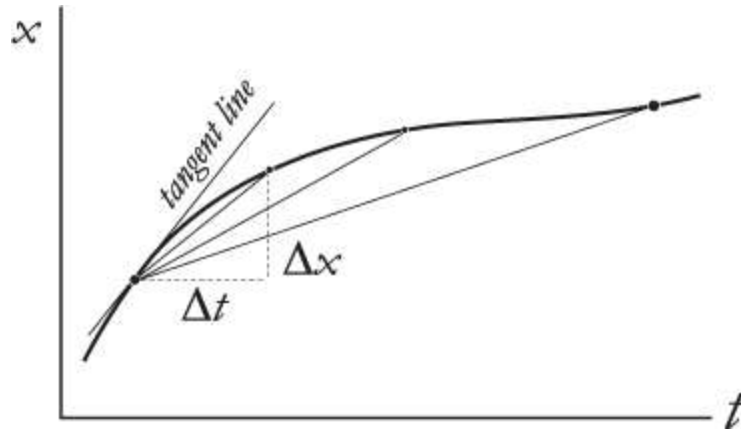
If the function as a whole is curved rather than straight, we can divide the total change in position by the total change in time, to find the average velocity over that interval.

$$v_{\text{average}} = \frac{\Delta x}{\Delta t}. \quad (2.5)$$

This looks similar to (2.3), but that expression was for the unique velocity along a constant-velocity path, while this is the average velocity for some specific time interval along any given path.



This isn't quite what we're looking for. We don't want the average velocity over some arbitrary interval, we want the instantaneous velocity any each moment. But you can maybe see where we're going. The time interval Δt that we chose to consider was arbitrary; we can make the interval anything we like. So let's zoom in. We can choose smaller and smaller values of Δt , implying smaller and smaller values of Δx . While both Δx and Δt can shrink all the way to zero, their ratio $\Delta x/\Delta t$ approaches some number that need not be zero. In fact, it approaches exactly what we're looking for—the slope of the tangent line at our initial point.



The procedure we've just outlined is called **taking the limit** as Δt approaches zero. Zero divided by zero isn't anything at all, mathematically speaking; it's just undefined nonsense. But we can take the limit of Δt and Δx as they both individually approach zero, and their ratio—the velocity, v —is well defined. We call this the **derivative** of the function $x(t)$, and write it in a suggestive notation as

$$v = \lim_{\Delta t \rightarrow 0} \left(\frac{\Delta x}{\Delta t} \right) = \frac{dx}{dt}. \quad (2.6)$$

That's it. That's what a derivative is: the slope of a curve at some point, defined by taking the limit of the slope of a sequence of lines that get closer and closer to the tangent line at that point. We considered the particular case of x as a function of t , where the derivative is the velocity, but the idea is much more general. The acceleration, for example, is the derivative of the velocity with respect to time,

$$a = \frac{dv}{dt}. \quad (2.7)$$

Velocity is measured in meters per second, while acceleration is measured in (meters per second) per second, since it's the rate of change of velocity. The acceleration due to gravity of a freely falling object near the Earth is 9.8 meters per second per second (sometimes abbreviated as m/s^2).

Often we care about some function of x , which we can write $f(x)$, and its derivative will be df/dx . Every function is a function "of" some variable, and we can calculate the derivative with respect to that variable. It makes no difference whatsoever what symbol we use to denote the variable; that's just a label we choose at our convenience. It's useful to our comprehension to call time t and distance x , but that's totally up to us.

The quantities dx and dt are known as **infinitesimals**. They look like numbers we divide to get v , but the reality is a bit more subtle. If they actually were numbers, their value would be zero, and that's no good. Rather, they represent the idea of the limit of Δx and Δt as those two quantities both approach zero. The ratio of these two infinitesimals is a well-defined number, even if they individually are not. All I can say is, mathematicians have put an enormous amount of thought into making all this seem respectable. As physicists, we tend not to worry too much. If it works, we give the thumbs-up and move on to the next problem.

Two things might be bugging you at this point. First, it seems almost too easy. All we did was define the derivative by being very persnickety about the slope of a line tangent to a curve. Something as reputationally intimidating as calculus should be harder than that. And second, at the end of the story it's still not completely clear what we're supposed to *do* with this definition. It's a bit abstract. If we're handed an actual function, or the readout from an odometer, do we really have to go through all of this rigamarole to find its derivative?

These two issues are related, and they basically cancel each other out. If this were a real calculus class, you would immerse yourself in a tedious but reassuringly explicit set of rules for how to actually calculate the derivatives of given functions, a process known as **differentiation**. Consider a very simple function, $f(x) = ax + b$, where both a and b are fixed parameters (often just called constants).^{*} This is known as a **linear** function, since plotting it would reveal a straight line.

We can find the derivative of this linear function simply by thinking about it. The constant b has no effect on the slope of the line, so we can ignore it. And the constant a just *is* the slope: If we change x by an amount Δx , then $f(x)$ changes by $a\Delta x$, so $\Delta f(x)/\Delta x = a$, no matter what x itself is. We therefore have

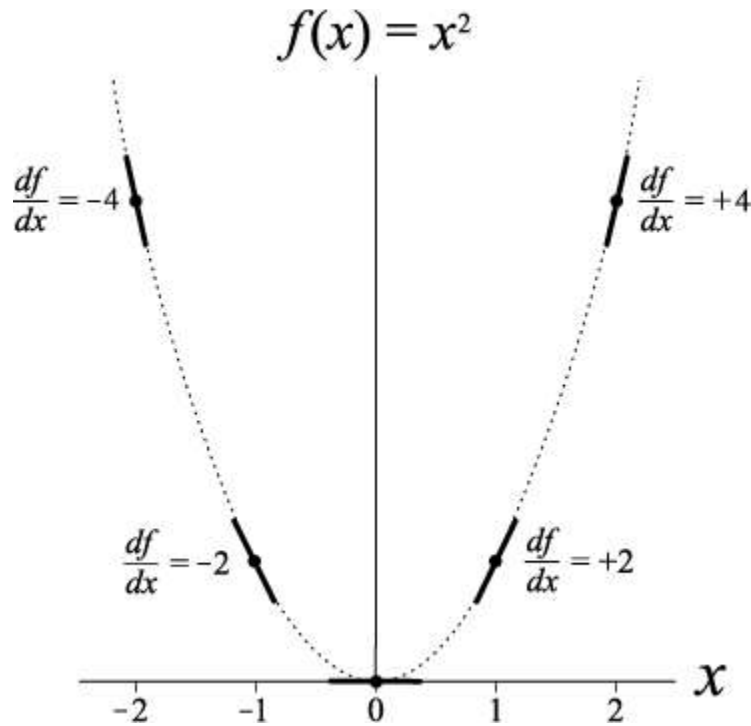
$$\frac{d}{dx}(ax + b) = a. \quad (2.8)$$

The derivative of our linear function is simply a constant, equal to the number multiplying x in the original function.

But differentiation is usually not so simple; most curves have a slope that changes from point to point. The derivative of the parabolic function $f(x) = x^2$, for example, is given by

$$\frac{d}{dx}x^2 = 2x. \quad (2.9)$$

We can see this in the figure, which plots the function $f(x) = x^2$ as well as the slope of the tangent lines at certain points ($x = -2, -1, 0, 1, 2$). For negative values of x , the parabola is sloping downward, and its derivative is negative. For positive x , the derivative becomes increasingly positive.



There are analogous formulas for the derivatives of x raised to other powers, and for the square root of x , and the logarithm of x , and sine or cosine of x , and the product of any two such functions, and so on. See Appendix A for some examples.

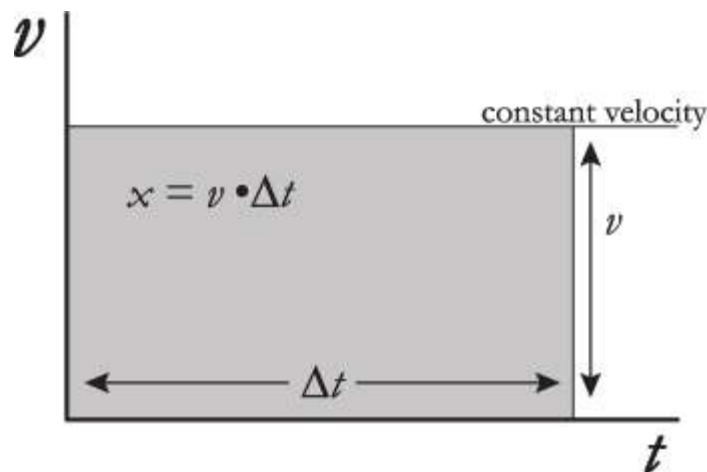
Learning all of these techniques is what makes calculus class a bit of a slog sometimes, but it's also what makes it useful to the working scientist. Our goal here is understanding the world as best we can, not training to become professional physicists. Basically we get to concentrate on just the fun parts. Differentiation gives us a way to calculate the slope of a curve, for example, to extract the velocity of a car from knowing its position over time. With that knowledge in hand, we can move on.

INTEGRALS

According to the Laplacian paradigm for classical physics, we can determine the future evolution of an object if we know its current position and its velocity, as well as those same quantities for all of the other relevant objects that might be affecting it. Then we can figure out what forces are acting on the object, and from Newton's second law (2.1) we can find its

acceleration. With all that in hand, we'd like to actually figure out the object's trajectory. If velocity is the rate of change of position, and acceleration is the rate of change of velocity, we'd like to add up all those accumulated changes to determine how the position and velocity evolve over time.

Let's go back to a car moving in a straight line at constant velocity. But instead of plotting position as a function of time, let's pretend we don't know that, and plot velocity as a function of time. That's pretty easy when the velocity is constant.



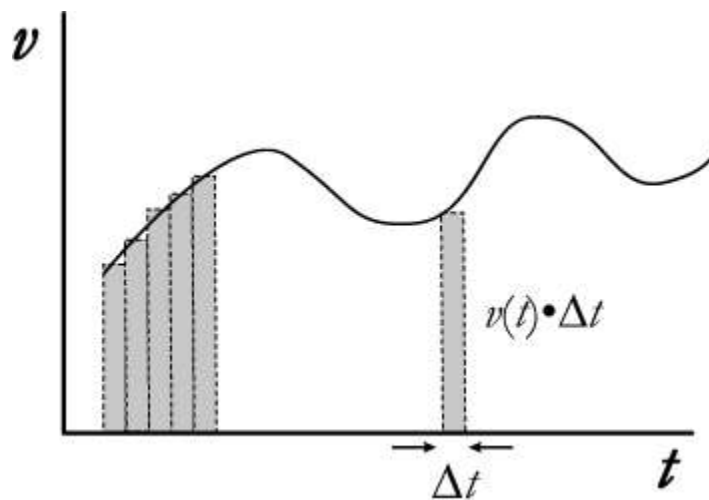
When something moves at constant velocity v , the distance it travels x is just that velocity times the time it spent moving, $x = v\Delta t$. There is a nice geometrical way of thinking about this in terms of the above plot: The distance traveled is just the area of the rectangle stretching horizontally from 0 to Δt and vertically from 0 to v . We can think of the accumulated amount of some quantity as the area under the curve defined by its function.

We'd like to be able to generalize this to the case when the velocity is not constant. When we were developing the idea of a derivative, the trick was to zoom in on a curve so that it looked like a straight line. We can use analogous reasoning here. The area under a curvy function $v(t)$ can be approximated by picking some small increment Δt , calculating the area under the rectangle from $t = 0$ to $t = \Delta t$ (which is just $v(0) \cdot \Delta t$), then doing the same for the curve from $t = \Delta t$ to $t = 2\Delta t$, and so on. At the end we add up all the areas of these skinny rectangles, and we get a quantity that is

approximately equal to the area under the curve. The procedure of adding a lot of quantities together is represented by a summation sign, which is written as Σ , the capital Greek letter Sigma.

$$\text{Area under } v(t) \approx \sum_{\text{rectangles}} v(t) \Delta t. \quad (2.10)$$

The wavy equals sign is a way of writing “approximately equal to.”



As our time interval Δt gets smaller and smaller and our rectangles get skinnier and skinnier (but also more numerous), this procedure comes closer and closer to the true area under the curve. We therefore, just as in the case of derivatives, take the limit as Δt gets infinitesimally small, and call it dt . We also replace the summation sign Σ with a new symbol that looks like an artistically deformed S . The result is the **integral** of the velocity with respect to time, which gives us the accumulated distance traveled:

$$\Delta x(t) = \text{limit} \left[\sum v(t) \Delta t \right] = \int v(t) dt. \quad (2.11)$$

Similarly, the amount by which the velocity changes can be calculated as the integral of the acceleration:

$$\Delta v(t) = \int a(t) dt. \tag{2.12}$$

We're hiding some information here to keep our notation clean. What we've calculated is the change in the position (or velocity) between some initial time and some final time; a more careful notation would indicate what those two times actually were. See Appendix A for details.

Just like derivatives can be thought of as a way of making sense of zero divided by zero, an integral can be thought of as a way of making sense of infinity times zero, where infinity is the number of skinny rectangles under the curve and zero is the area of each rectangle. It can all be made fairly rigorous (mathematicians refer to this subject as simply **analysis**). But you can see why Newton was hesitant to rely on calculus in the *Principia*. The ideas were very new at the time, and even today, some folks working in the foundations of mathematics are skeptical that calculus is *entirely* rigorous. Happily, it works more than well enough for physics purposes.

If we have Newton's laws and we know the forces acting on the object, we don't have to integrate anything to get the acceleration; it's given directly from $F = ma$. We can integrate acceleration to get velocity, and we can integrate velocity to get position. So we see the promise of the Laplacian paradigm fulfilled: Given an initial position and velocity, we are able to construct the entire trajectory of the object.

We can think of differentiation and integration as **operators** on functions: maps from functions to other functions. You give me one function, I can create another one by taking its derivative, or yet another one by taking its integral. In fact they are inverse operations of each other; the derivative undoes the integral, and vice versa.

$$\begin{aligned} \text{Derivative}\{\text{Integral}[f(x)]\} &= f(x), \\ \text{Integral}\{\text{Derivative}[f(x)]\} &= f(x). \end{aligned}$$

(2.13)

Or in symbols,

$$\frac{d}{dx} \int f(x) dx = f(x),$$
$$\int \frac{df}{dx} dx = f(x).$$

(2.14)

As a matter of practice, calculating derivatives of functions is pretty easy, but taking their integrals can be quite difficult. Even the best physicists will often resort to using a computer to find a numerical solution when they need to know the value of a particular integral.

We won't worry too much about “doing” derivatives and integrals—taking some specified function and calculating the derivative or integral of it. Some examples are given in Appendix A, but mostly we are interested in the underlying concepts, rather than explicit calculation. We will use one simple result: The integral of the infinitesimal interval itself equals a finite interval:

$$\int dx = \Delta x.$$

(2.15)

This equation simply says “The total amount of x we accumulate is the change in x from the start to the end of the process.” The variable x here can stand for anything at all—distance in space, duration in time, whatever physical quantity we care about at the moment.

CONTINUITY AND INFINITY

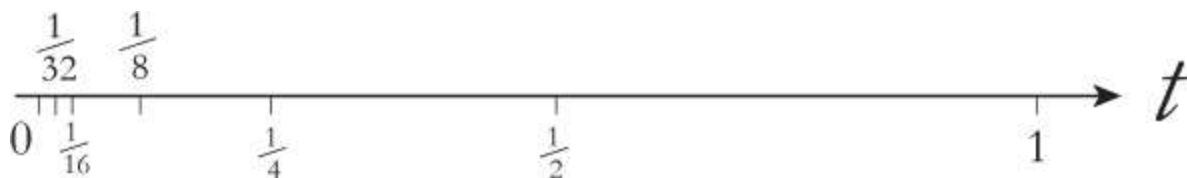
Since the day Isaac Newton laid down his laws, a number of other kinds of laws have been suggested for fundamental physical systems. James Clerk

Maxwell wrote down a set of equations for electricity and magnetism; Albert Einstein proposed an equation for the curvature of spacetime; Erwin Schrödinger suggested an equation for the wave function of a quantum-mechanical system; and many more. What all of these have in common is that they are **differential equations**—they involve derivatives (with respect to time, and often also with respect to space) of whatever substance is being described. That’s why calculus is so central to how physics is done.

Does it have to be that way? We don’t know the final laws of physics, so we should be open to different possibilities while we think about what they might be. One possibility, of course, is that the entire Laplacian paradigm is off base: that the fundamental laws are intrinsically global rather than local, so they can’t be thought of as starting with some information at one time and chugging forward/backward to construct the entire solution.

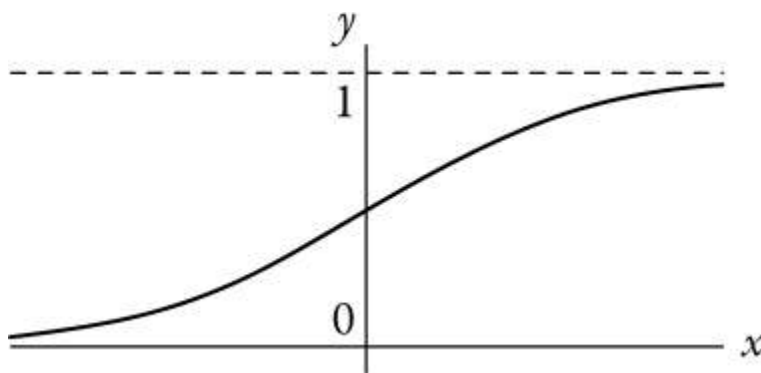
Another possibility is that time is discrete, rather than continuous. Maybe there actually is a shortest possible time interval, and the universe evolves in units of this interval rather than smoothly. That’s a pretty obvious possibility to contemplate, with some advantages and disadvantages. One advantage is that there are a number of mathematical and philosophical puzzles associated with the idea of continuity (and its close cousin, infinity), and perhaps the reason why they are puzzling is that they don’t apply to the real world, so who cares? One disadvantage is that it would require us to toss out everything we thought we knew about classical mechanics and relativity, at least as part of the fundamental description of the world. That might ultimately be worth doing, but it’s reasonable to approach such radical changes with a degree of caution.

To say that time (or some other quantity) is continuous implies that it takes on an infinite number of values, even between two points we think of as being a finite distance apart. You can convince yourself of this by imagining a line that represents time running from the past to the future. Pick out two moments, and label them $t = 0$ and $t = 1$.



It's clear we can pick out a moment halfway in between, at time $t = \frac{1}{2}$. But then it's equally clear we can pick out a moment halfway between $t = 0$ and $t = \frac{1}{2}$, namely, $t = \frac{1}{4}$. And we can keep going with $t = \frac{1}{8}, \frac{1}{16}, \frac{1}{32} \dots$. And we didn't have to go between $t = 0$ and the next number, we could have gone between $t = 1$ and the previous number, obtaining $t = \frac{3}{4}, \frac{7}{8}, \frac{15}{16}, \frac{31}{32}$. We can easily find an infinite number of numbers between any two points on a continuous line.

More remarkably, the infinity representing "the number of numbers between 0 and 1" is the same size as the infinity representing "the number of numbers between $-\infty$ and $+\infty$." That seems bizarre, since we tend to think that a proper subset should have fewer elements than the whole set. But infinity is special. We know that there are an equal number of numbers between 0 and 1 as there are between $-\infty$ and $+\infty$ because we can find an exact one- to-one correspondence between them. This correspondence can be represented by a simple function:



Here we have a function from x to y , with the property that any value of x between $-\infty$ and $+\infty$ gets mapped to some value of y between 0 and 1.

This might make you think that all infinite quantities are secretly the same size. Indeed, if you multiply infinity by 2 (or any other number greater than 0), you get back the same infinity. The number of integers is equal to the number of even integers. But things are not going to be so simple: There are different degrees of infinity, as discovered by German mathematician Georg Cantor in the late nineteenth century. **Cantor's theorem** shows there are infinitely many integers, and infinitely many real numbers, but the number of real numbers is greater than the number of integers. This

discovery wasn't received with universal acclaim. Many mathematicians doubted Cantor's result, and his contemporary Leopold Kronecker called him a "corrupter of youth." Modern mathematicians generally accept the validity of Cantor's argument but continue to worry over whether we should trust the assumptions that go into it.

Does any of this matter for physics? Maybe not. We human beings are finite creatures, and one can take the stance that none of us can really discern a practical difference between "infinite" and "really big" (or "zero" and "really small"). So perhaps when it comes to describing the physical world, we can choose to be careful about infinity or not. But we shouldn't confuse what we human beings can hold in our heads with what nature actually does. It's conceivable that someday we will appreciate that when it comes to reality, there is one best way of thinking about issues of continuity and infinity, even if we don't know it yet.

* Rocky Kolb, *Blind Watchers of the Sky: The People and Ideas That Shaped Our View of the Universe* (Basic Books, 1997), 134.

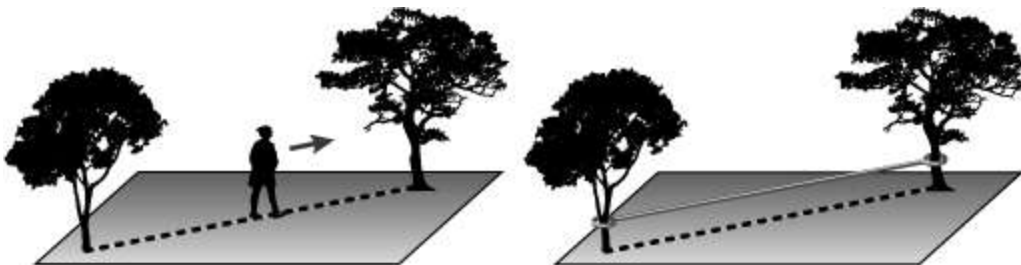
* Here x is the argument of the function, and $f(x)$ is its value. We're not assigning a separate variable name to the value, but you could if you wanted to, for example, $y = f(x)$. If we were to plot the function, x would be the horizontal axis, and $f(x)$ would be the vertical.

THREE

DYNAMICS

Imagine two trees some distance apart, in a park where the ground is perfectly flat. Stand at one tree and point yourself in the direction of the other one. Now put on a blindfold and start walking. Let's assume you're really good at maintaining the direction in which you are moving, and that nobody plays tricks on you or gets in your way. At the end of your journey, you will find yourself at the other tree. And if you take off the blindfold and look back at your footprints, you will see that you moved in a straight line.

Now do something completely different. Take a long string, tie one end to one of the trees, and carry the other end to the other tree. Pull the string taut, so that there is the least amount of string we can use while still reaching between the two trees. The result is once again a straight line—the stretched string will lie exactly on top of the footprints from your previous journey.



This is pretty obvious and somewhat remarkable at the same time. We have the common-sense notion of “a straight line,” but two distinct ways of

constructing it. One is “keep moving in the same direction,” and the other is “minimize the distance between your beginning and ending points.” The first way reflects a local philosophy of action, in the spirit of the Laplacian paradigm we discussed in the previous chapter—at every moment of time you’re doing a particular thing, and by the end all of your effort has constructed a certain path. The second way is more global, reminiscent of Kepler’s laws—of all possible ways a string could stretch between the two trees, you’re choosing the one that is the shortest. But these seemingly independent ideas are picking out the same answer at the end of the day.

Physics works the same way. We have emphasized, for good reason, Laplace’s idea that information contained in the state of a system at a single moment can be used to construct its entire evolution through time, chugging implacably forward from one moment to the next. But there are other ways of getting the same answer, ultimately equivalent although very different in appearance. These other ways might invoke a rather different set of fundamental concepts in their formulation. This raises interesting questions about which vocabulary is “best” or “more real.” If different ways of thinking are truly precisely equivalent, maybe that doesn’t matter; but we don’t know the ultimate laws of physics, and it’s possible that one way of thinking will give us a more direct route to getting there. As Richard Feynman once said, two formulations of a theory might give exactly the same predictions and yet not be “psychologically identical when trying to move from that base into the unknown.”

The last chapter focused on “change,” whereas this one is about **dynamics**. The difference is that change is a completely general concept, whereas dynamics is specifically concerned with changes that obey the equations of physics. We’ll be looking at the properties of specific physical systems and what classical mechanics tells us about their behavior. By thinking about kinetic and potential energy, we’ll be led to interesting insights that relate the dynamics of different objects. This will ultimately inspire us to reformulate mechanics through a global view that considers the system’s history as a whole—a remarkable idea known as the “principle of least action.”

WHAT MATTERS TO MOTION

Let's think a bit more systematically about what's going on in the Laplacian paradigm. To keep things simple, we focus on a single particle moving in three-dimensional space, so its position is specified by a vector $\vec{x}$. The state of the system consists of both that position and the particle's velocity, which is the derivative of position with respect to time, $\vec{v} = d\vec{x}/dt$. Six numbers in total, for one particle in three dimensions: three components of position, and three components of velocity.

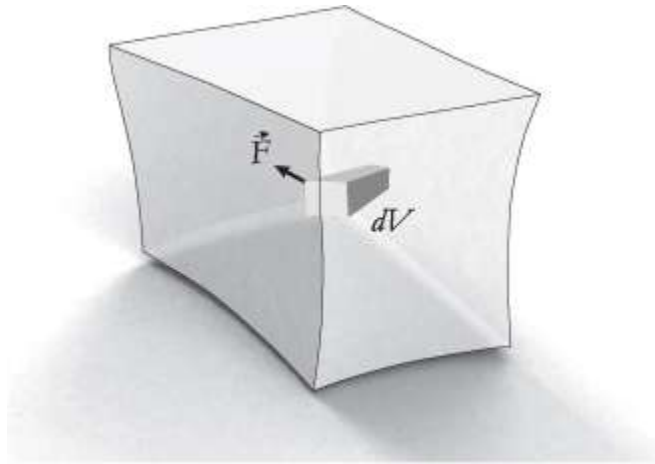
So the recipe is this. We have some specified situation, like “a ball rolling on a hill” or “a planet orbiting the sun.” You give me the data $(\vec{x}, \vec{v})$, at some particular time t_0 . From this, and our knowledge of the situation, we can calculate the total force acting on the object, $\vec{F}(\vec{x}, \vec{v})$. For example, if our object represents a planet, the force is given by Newton's law of gravitation applied to the sun and all the other planets. Then Newton's second law tells us the acceleration, $\vec{a} = \vec{F}/m$. Now we know not only the initial data $(\vec{x}, \vec{v})$ but also how rapidly they are changing:

$$\begin{aligned} \text{velocity } \vec{v} &= \text{rate of change of } \vec{x} = \frac{d\vec{x}}{dt}, \\ \text{acceleration } \vec{a} &= \text{rate of change of } \vec{v} = \frac{d\vec{v}}{dt} = \frac{\vec{F}}{m}. \end{aligned}$$

Then we can use calculus to move forward in time, constructing the entire trajectory $[\vec{x}(t), \vec{v}(t)]$.

This is a marvelously flexible framework. We've been talking a lot about particles, but classical mechanics is much more general than that. Let's say we want to describe an extended material, like a solid, liquid, or gas. And imagine we're treating it macroscopically, as a true continuum of matter rather than as a collection of individual atoms. What we can do is to zoom in on a tiny part of the object, an infinitesimal “volume element” dV of material. This element will be acted on by various forces; it will be tugged on by gravitational or electrical forces coming from the outside world, but it will also be pushed around by pressure from the other bits of the material

that are right next to it. If we know the position and velocity of our little element, and the forces acting on it, Newton's laws tell us how it's going to move. After that, it's calculus to the rescue—we can derive equations for the system as a whole by adding up what happens to each little volume element.



The fact that we need both position and velocity as input data to fix the trajectory of our system is important, but it's equally important that we don't need any *other* information about the initial motion of the system. We need to know what the acceleration is, but we don't need to be given it as an independent piece of information, since it's determined by Newton's second law (once we know what situation we're in and what the rest of the world is doing). Velocity is the derivative of position and acceleration is the derivative of velocity, so we say that acceleration is the *second derivative* of position:

$$\vec{a} = \frac{d\vec{v}}{dt} = \frac{d}{dt} \left(\frac{d\vec{x}}{dt} \right) = \frac{d^2\vec{x}}{dt^2}. \quad (3.1)$$

Remember when you are looking at this notation that d is not a variable by itself; d/dt is an operator that takes the derivative with respect to time. The

second derivative is when we operate d/dt twice on the same function, which is written d^2/dt^2 .

We can also contemplate higher-order derivatives, which have been given whimsical names:

- Velocity = first derivative of position (with respect to time)
- Acceleration = derivative of velocity = position = second derivative of
- Jerk = derivative of acceleration = third derivative of position
- Snap = derivative of jerk = fourth derivative of position
- Crackle = derivative of snap = fifth derivative of position
- Pop = derivative of crackle = sixth derivative of position

These terms are sometimes useful in engineering applications (and breakfast applications). But physicists rarely use them. For most purposes you simply don't need to—once you know the position and velocity of every piece of your system, you can figure out the accelerations and go from there.

GALILEAN RELATIVITY

Something quite profound is going on here. The fact that we need to be given the position and velocity of our system reflects the fact that there is **no preferred position or velocity** in the universe—no state picked out as somehow special, against which other states could be measured—at least as far as the laws of physics are concerned. For position this is not that hard to accept. If you do a physics experiment to test a fundamental law of nature in Florence, Italy, and then do the same experiment in Cambridge, England, you expect to get the same answer. You might get different answers for measurements of quantities that depend on your local environment, like the speed of sound (which depends on atmospheric pressure) or even the acceleration due to gravity (which depends on your elevation). But we don't expect the underlying laws themselves, like Newton's second law or the

inverse-square law for gravity, to change from place to place. The laws of physics don't think of any locations in the universe as special.

The laws of physics also don't pick out any one velocity as special, although that's less intuitive. When you talk about the velocity of something, strictly speaking it is always measured with respect to something else. Given two objects, the distance between them is well defined, and their mutual velocity is the derivative of that distance with respect to time. There is no such thing as "the velocity," full stop. In our everyday lives this deep feature of reality is obscured to us, because we are never too far away from an obvious standard of reference: the Earth. When we talk about the speed of a car or plane, we are typically assuming that this speed is measured with respect to the Earth. But that's a feature of our local environment, not something built into the fundamental laws of physics. (And as pilots quickly learn, it's important to distinguish your speed relative to the ground from your speed relative to the air.)

Imagine you were sealed inside a spaceship with its engines off, not experiencing any acceleration. Without looking outside (or using instruments to do so), there would be no way for you to know how fast you were moving. That's because there's no such thing as "how fast you are moving," without specifying with respect to what. There is no absolute measure of rest in the universe, just as there is no preferred location.



The absence of a preferred standard of rest in the laws of physics was first pointed out by Galileo. He wasn't thinking about spaceships, but he did propose an equivalent scenario based on actual seagoing ships. His discussion was in the context of the then-current argument over whether the sun moved around the Earth or (as Galileo thought) the Earth rotated. Many people argued that if the Earth rotated, we would know about it, since the motion of the Earth's surface would be added to the motion of anything else. Galileo replied that all that mattered was the relative motion between two objects. For example, he posited that if you dropped a cannonball from the top of a ship's mast, it would drop straight down from the point of view of someone on the ship, whether the ship was stationary or moving with respect to the sea.

The emphasis on “relative” motion reminds us of the theory of relativity, and for good reason. The absence of a preferred location or standard of rest in the universe is known as the **principle of relativity**, and it was discussed by Galileo long before Einstein came on the scene. Newtonian mechanics is built on the foundation of **Galilean relativity**, which allows for any relative speed at all between two objects. The modern theory of relativity replaces that idea with “Lorentzian” relativity, after Dutch physicist Hendrik Antoon Lorentz. The difference is that Lorentzian relativity includes an upper limit on the relative speed between two objects, given by the speed of light.

Notice that we've disclaimed the existence of a preferred position or a preferred velocity but haven't denied the existence of a preferred acceleration. That's because there is a preferred acceleration: zero. There is a special class of paths, known as **inertial trajectories**, which are those that aren't undergoing any acceleration at all. Unlike position or velocity, if you were sealed in a spaceship you could tell whether you were being accelerated; if you were, the spaceship would push on you in that direction.



BALL ON A HILL

In accordance with the spherical-cow philosophy, one of the most useful things we can do in physics is to pinpoint a simple idealized problem that is related to a large number of more realistic situations and understand that “toy model” (as physicists like to call them) as well as we can. We all have intuition about how the world works, but that intuition can be developed and extended by gaining familiarity with understandable examples.

There is no more common and useful toy model in physics than a ball rolling around in a hilly landscape. We already used it back in [Chapter 1](#), when we talked about kinetic and potential energy. This example will turn out to be far more useful than you might initially have guessed; the insight we gain from thinking about balls rolling down hills will be directly applicable to quantum fields and the Standard Model of particle physics.

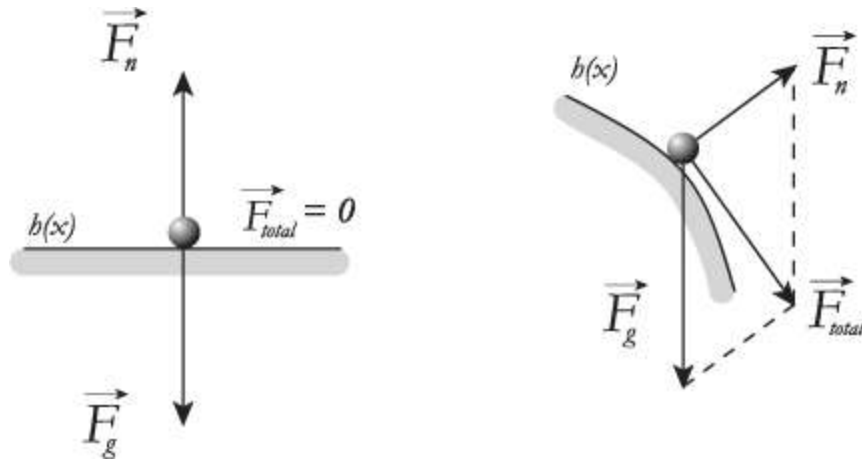
What we have in mind really is an idealized toy model, despite the fact that you have probably come into contact with actual balls rolling down actual hills at some point in your life. For one thing, as usual, we will completely ignore air resistance and friction and other ways energy can be dissipated. They’re not hard to include, but our starting point is always to simplify down to the essentials, then add complications in later. More subtly, a real rolling ball will have not only kinetic energy and potential energy but also energy from the rotation due to its rolling. We will ignore

that as well. What we imagine is a perfect featureless particle, moving without dissipation in a potential-energy landscape, with the sum of potential and kinetic energy remaining perfectly conserved.

According to the rules of classical mechanics, we want to specify the position and the velocity of the ball, then calculate the net force acting on it, which will tell us the acceleration. We imagine that the ball always stays on the surface of the landscape, not flying above it or buried underneath. As a further simplification, we'll consider motion along only one dimension, call it x . The ball also moves in a second dimension, height, but that's fixed to be the height of the landscape, $h(x)$. (We will not permit our ball to get hang time by flying off the hill.)

The net force is the sum of two different forces: the gravitational force pulling down, and the force exerted by the ground itself. The force from the ground is called the **normal force**, not because it's especially ordinary but because it's always perpendicular to the slope of the hill, and "normal" is just a synonym for "perpendicular" (as is "orthogonal" in this context).

Consider the simplest case we can imagine, where the landscape is flat, so that the height $h(x)$ is the same for every value of x . The gravitational force $\vec{F}_g$ pulls down, and the normal force $\vec{F}_n$ is perpendicular to the ground, so in this case it must push directly up. We therefore know instantly that there is no net force to the right or left, since the net force is the sum of one force directly down and one directly up. Furthermore, we've said that the ball won't be digging into the ground or flying up into the air, so the net force must be exactly zero. In other words, the gravitational force and the normal force are equal and opposite, and they add up to give no force at all, so there is no acceleration on the ball. This will be true no matter what the initial velocity of the ball is; whatever it is doing to start, it will keep moving in the same direction at a constant speed.



When the landscape is sloped, things get more interesting. Gravity still pulls the ball straight down, but now the normal force will not be vertical. As a result, when we add the two forces together, we'll have a nonzero net force. The total force, and thus the acceleration, will be in the direction of “down the hill.” If we start with the ball at rest, it will start rolling downward; if it's moving down already, it will speed up; and if it's rolling up the hill, it will slow down.

Our rolling ball has both potential and kinetic energy. The potential energy is

$$V(x) = mgh(x), \tag{3.2}$$

where m is the mass of the ball, $g = 9.8$ meters/second/second is the acceleration due to gravity, and $h(x)$ is the height of the hill at each point x . The notation here is a bit confusing if you're not used to implicit multiplication signs; m is a constant number, g is a constant number, and $h(x)$ is a function that yields a number h at each value of x . We multiply these three numbers together to get the potential energy, which is conventionally labeled V , although other letters are sometimes used. Since it's the energy that's going to matter to us, not the height of the landscape, we often speak directly in terms of **the potential** $V(x)$.

If we wanted to use Newton's second law $\vec{F} = m\vec{a}$ to solve for the motion of the ball, this potential-energy function gives us a nice way to think about it. The real ball moves both vertically and horizontally as the landscape undulates, so we have to think about adding vectors together to get the net force, as we discussed. But since we're imagining that the ball stays on the ground the entire time, it's really only horizontal motion that we need to calculate; the vertical ups and downs come along for the ride.

So we need to think about the acceleration in the x -direction, which comes from the force in the x -direction. Intuitively, we expect that force to come from the slope of the potential: The ball will be nudged down the slope, and the steeper the slope, the bigger the nudge. In calculus-speak, the force in the x -direction is minus the derivative of the potential with respect to position.

$$F_x = -\frac{dV}{dx}. \tag{3.3}$$

The subscript on F_x is reminding us that it's the force in the x -direction. And the minus sign is just common sense: An upward-sloping potential (positive dV/dx) pushes the ball to the left, corresponding to a negative force in the x -direction.

THE ENERGY PERSPECTIVE

Once we know the force pushing on the ball, we could roll up our sleeves and solve for exactly how the particle will roll around in any specified landscape, using Newton's second law to calculate the acceleration and then doing some integrals. But that sounds kind of tedious. Let's instead get a bit of intuition for how things will go, just from thinking about energy conservation.

Along with the potential energy, we also have the kinetic energy,

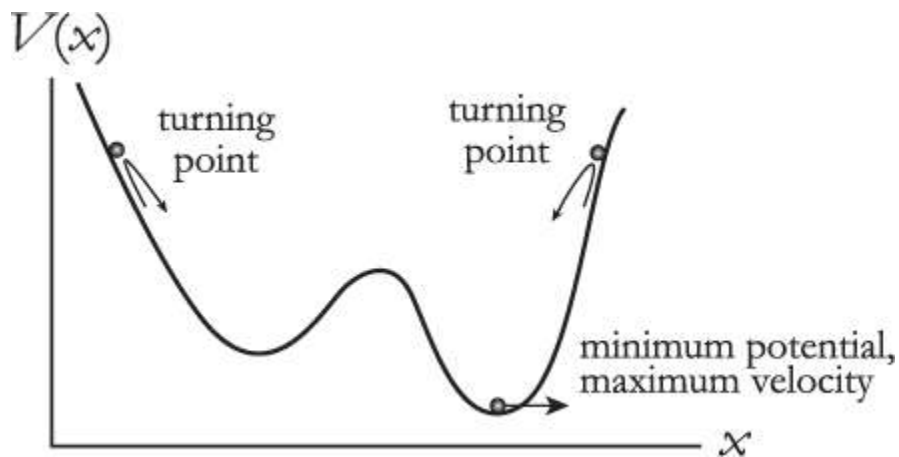
$$E_{\text{kinetic}} = \frac{1}{2}mv^2, \quad (3.4)$$

where v is the speed of the ball. We add them together and get a number, the total energy, that stays constant over the ball's trajectory:

$$E_{\text{total}} = V + E_{\text{kinetic}}. \quad (3.5)$$

This simple equation by itself tells us quite a bit about the behavior of the ball. The kinetic energy is as small as it can be (namely, zero) when the velocity vanishes. So we instantly know that the potential energy, and therefore the height of the ball, is largest when the velocity is zero. Likewise, the velocity will be highest when the potential energy is lowest, at the bottom of the hill.

Conservation of energy gives us a nice global view of the ball's trajectory. Imagine we release the ball, with zero initial velocity, at the bottom of a valley. That's a minimum of the potential, where its derivative is zero. So there's no force on the ball, it just sits there. This accords pretty well with our intuition, that if we place a ball at rest at the bottom of a valley it won't move.



Now imagine starting the ball at rest again, but this time on a sloped portion of the hill. The total energy is simply the potential energy at this location. The ball will travel downward, speeding up and converting potential into kinetic energy. If the landscape starts sloping upward at some point, the ball will lose velocity as it now gains potential energy. And if the ball ever reaches the same height from which it began, its velocity will once again have to reach zero, since it will have regained exactly the potential energy it started with. That's known as a **turning point** for the trajectory, since the ball will then start rolling back in the direction from which it came.

In this idealized world of zero friction, the ball will travel forever back and forth between the two turning points. You might think it could reach the bottom and eventually come to a stop, but that's a case of our intuition misleading us: You're used to a world with friction. When the energy in the ball is precisely conserved, it oscillates back and forth for all eternity.

THE SIMPLE HARMONIC OSCILLATOR

There are spherical cows, and there are spherical cows. The favorite spherical cow in all of physics—the most important simple, exactly solvable physical system of amazingly wide-ranging applicability—is the **simple harmonic oscillator**.

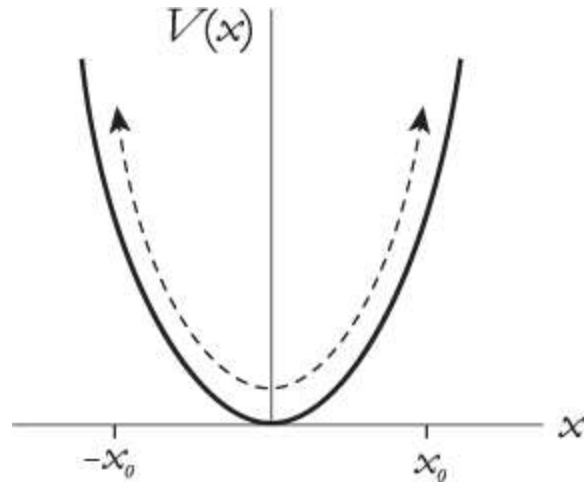
Consider our ball on a frictionless hill, but now let's be a bit more specific about the shape of the landscape. In particular, let's make it a parabolic valley with a minimum at $x = 0$, so the potential energy is

$$V(x) = V_0 x^2. \tag{3.6}$$

Here V_0 is a parameter that tells us how wide (if V_0 is small) or skinny (if V_0 is large) the parabola is.

Just from looking at the potential we can easily figure out what the ball is going to do. If we start it with zero velocity somewhere on the right-hand side, say $x = x_0$, it will start rolling toward the bottom, then up the left-hand

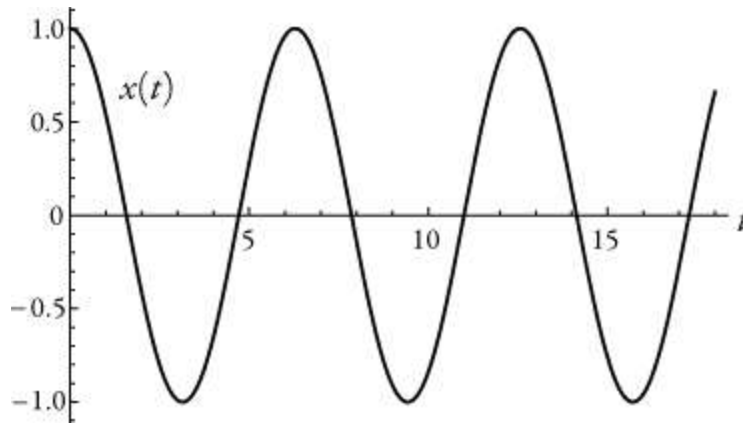
side. Since the potential is symmetric around $x = 0$, conservation of energy immediately tells us the ball will climb all the way to $x = -x_0$, where the potential energy will return to where it started. There the ball will once again have zero velocity and will start rolling back the other way. It will go all the way back to $x = x_0$, where the cycle will start again, and it will repeat forever.



We could alternatively think in terms of forces rather than energies. From (3.3), the force in the x -direction is minus the derivative of the potential. If the potential is $V(x) = V_0 x^2$, and from (2.9) we know that $d(x^2)/dx = 2x$, then we have $F_x = -dV/dx = -2V_0x$. So when x is negative, the force is positive, pushing the particle back to the right; when x is positive, the force pushes it to the left. In either case, the force pushes the particle back toward the minimum at $x = 0$. This is called a **restoring force**, and its magnitude is proportional to the displacement $x = 0$ away from the equilibrium point.

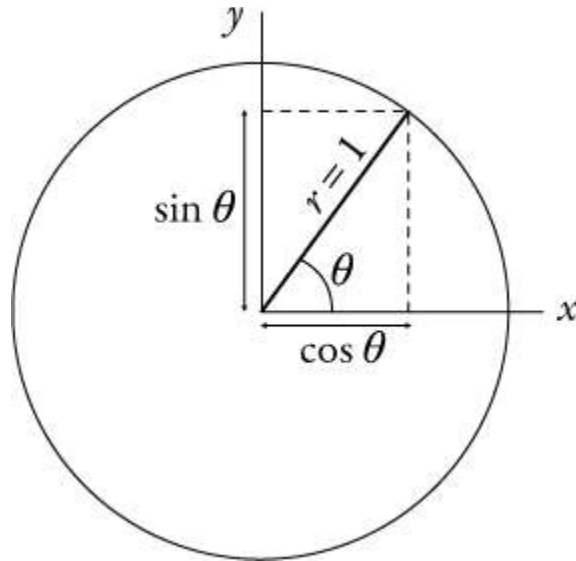
This kind of system is called an “oscillator” due to its back- and-forth motion. It’s “harmonic” when the potential is exactly proportional to x^2 (an x^4 potential would be an oscillator, but not a harmonic one), and “simple” when energy is exactly conserved (because there is no friction). There are also “damped” harmonic oscillators with nonzero friction, or “driven” oscillators where we put more and more energy into the system.

We can make a plot of how a simple harmonic oscillator behaves. Setting $x_0 = 1$ for simplicity, the particle starts at $x = 1$, moves down to -1 , oscillates back to 1, and continues on in this pattern.

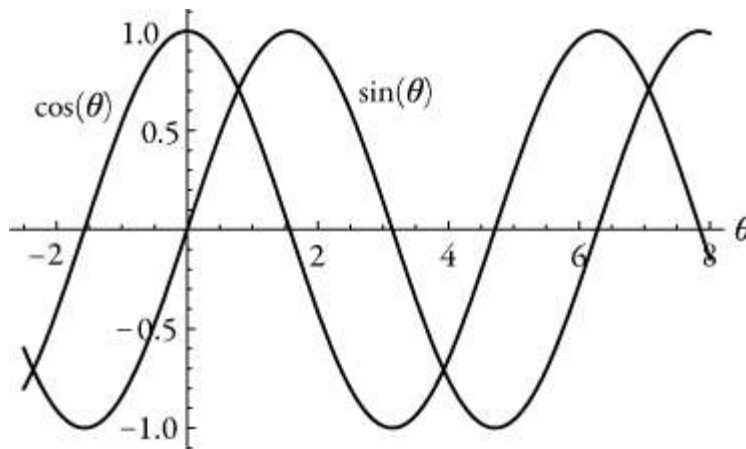


Functions of this type may be familiar (or cause flashbacks) if you've ever learned a bit of trigonometry. There are two especially important trigonometric functions: **sine**, which starts at zero, goes up to $+1$, then down to -1 , then returns; and **cosine**, which starts at $+1$, goes down through zero to -1 , then back again.

The easiest way to define these trigonometric functions is by thinking of a unit circle—that is, a circle of radius 1. Any point on the circle is uniquely specified by an angle θ from the x -axis. We're going to measure that angle in **radians**, units in which 360 degrees correspond to 2π radians, where $\pi = 3.14159 \dots$ is the famous numerical constant equal to the circumference of a circle divided by its diameter. (So one radian $= 180/\pi$ degrees.) There are a number of reasons for that, the most important of which is that the derivatives and integrals of sines and cosines take on elegant forms when we measure angles using radians. In these units, $\cos\theta$ is the projection of the point down to the x -axis, and $\sin\theta$ is the projection over to the y -axis.



We can see that $\cos(0) = 1$ and $\sin(0) = 0$. From there, both functions oscillate up and down as the angle θ goes from 0 to 2π radians.



Comparing the plot of these trig functions to the evolution of the simple harmonic oscillator, we see that the oscillator's position looks very much like the cosine function. That turns out to be precisely true. For a general oscillator starting at rest, the position evolves as

$$x(t) = x_0 \cos(\omega t).$$

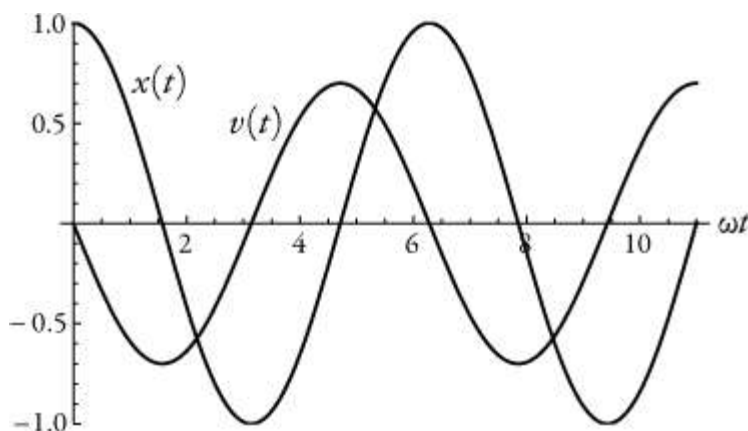
(3.7)

The symbol ω is the Greek letter omega, which stands for the **angular frequency** of the oscillator. Whenever we have some oscillatory phenomenon, the frequency f is the rate at which the oscillator returns to its starting point, while the angular frequency ω is the rate at which the angle goes from 0 to 2π they are related by $\omega = 2\pi f$. For the harmonic oscillator potential (3.6), the angular frequency is equal to $\omega = \sqrt{2V_0}$.

Now let's think about the velocity of the oscillator. It starts at zero, since we let go of our particle initially at rest. The particle starts moving to the left, so the velocity becomes negative. At the turning point the velocity returns to zero, and then it oscillates back and forth. This sounds somewhat like the sine function, except upside-down (since $\sin\theta$ starts at zero and goes up, while $v(t)$ starts at zero and goes down). That is also exactly right:

$$v(t) = -v_0 \sin(\omega t). \quad (3.8)$$

The velocity oscillates with the same angular frequency as the position. The coefficient v_0 will depend on the mass of the particle represented by the oscillator; you could relate it to x_0 and V_0 by thinking about energy conservation.

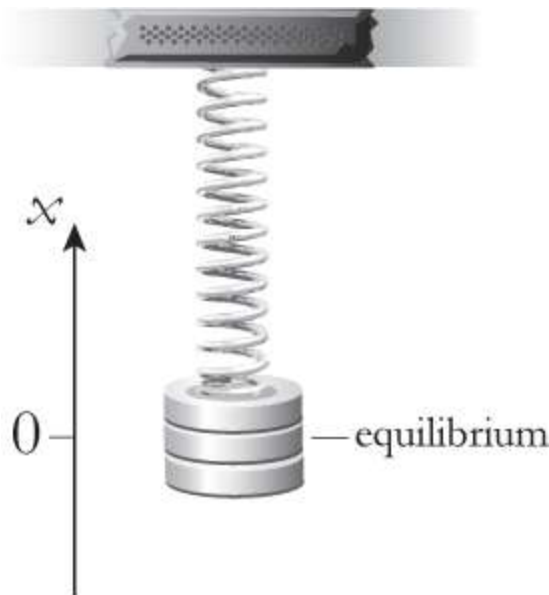


HARMONIC OSCILLATORS EVERYWHERE

Being able to solve equations of motion exactly, as we can for the simple harmonic oscillator, is satisfying as well as useful. It gives us a sense of accomplishment. And that ability is pretty rare in realistic physical situations. Even an unassuming fourth-power potential like $V(x) = V_0 x^4$ has no exact solutions expressible in terms of simple functions. The harmonic oscillator would be precious for that reason alone.

It's even better when your exactly solvable system appears over and over again in the real world. Happily, the simple harmonic oscillator does just that.

Think about a different kind of physical system, seemingly unrelated to a ball rolling on a hill. We consider a weight attached to a spring, suspended from above. If we pull the weight so that the spring stretches, the spring will exert a force pulling it back. But it's also true—at least in an idealized world where the spring is perfect and it doesn't bend or buckle—that if we push the weight upward, the spring will exert a force pushing it back down. There will be an **equilibrium** point in the middle where we let go of the weight and all the forces balance, so that it doesn't move at all. If we displace it a bit upward or downward from this equilibrium point, the weight will oscillate in an up/down cycle.



It turns out that the vertical motion of our weight-on-a-spring system describes a sine wave, just like our ball in a parabolic potential. (Sines and cosines and any shifted versions thereof are often just called “sine waves,” or “sinusoidal.”) It’s worth dwelling on this for a bit. The physical systems in these two cases are utterly separate: a ball rolling right to left in a valley, and a weight hanging from a spring. But the underlying *equations* are equivalent. From the abstract perspective of a theoretical physicist, they are the same system. (An experimentalist who has to build the system may disagree.)

There is a deeper reason why the simple harmonic oscillator is so ubiquitous in physics: An enormous number of systems, all the way up to vibrating quantum fields in the Standard Model of particle physics, are *approximately* simple harmonic oscillators. It’s not hard to understand why.

Consider some physical system that oscillates back and forth with no friction, so that energy is conserved. There is some equilibrium point about which the system oscillates (or stays still, if the system starts there at rest). Let x be the quantity that measures how far the system is displaced from that equilibrium point. The potential energy is a function $V(x)$. For the moment we imagine that function to be completely arbitrary.

Now we deploy a crucial mathematical fact: We can express our potential-energy function as an **infinite series**, a sum of terms that each look like x raised to some power:

$$V(x) = a + bx + cx^2 + dx^3 + ex^4 + \dots \quad (3.9)$$

By carefully choosing the numerical coefficients $\{a, b, c, \dots\}$, any well-behaved function can be represented in this form. (“Well-behaved” excludes things like the function discontinuously jumping from one value to another.)

Let’s think about this expression a bit. The first parameter, a , is just a constant number. It has no effect on the slope of the potential; different values of a correspond to moving the potential up or down without changing its shape. But it’s only the slope of the potential that creates a force, not the potential’s numerical value. From (3.3) we know that the force on the system is the derivative of the potential, which doesn’t care

about a . So we can just set $a = 0$ without changing the behavior of the system in any relevant way.

Now think about the rest of the infinite series. We have defined x so that $x = 0$ at the equilibrium point, where the system could just sit there without moving. What happens if we nudge the system a tiny bit? That corresponds to values of x that are very small. And when we take a small number (much less than one) and multiply it by itself, we get an even smaller number. So when we look at all the terms in (3.9), they become less and less important as we move further down the series to higher and higher powers of x . For sufficiently small x , all that should matter is the very first term, bx . This is an approximation, of course, but it's an approximation that is better and better as we consider smaller and smaller values of x . No matter what the other coefficients are, there will always be values of x that are so small that only the first term in the series matters.

Wait a minute. If $x = 0$ is the equilibrium point, that means $V(0)$ should be a minimum value—the bottom of the valley—where the slope is zero and there is no force. But in the small- x approximation where $V(x) \approx bx$, the slope of V at $x = 0$ is simply b . That's not zero unless b is itself zero. So given all of our assumptions, we can set $b = 0$ just as we set $a = 0$; otherwise $x = 0$ isn't a minimum at all. The potential we are left with is

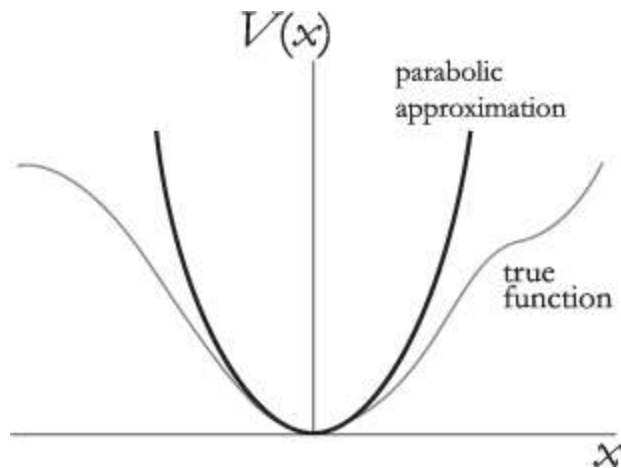
$$V(x) = cx^2 + dx^3 + ex^4 + \dots \quad (3.10)$$

And now we can make the same argument as before, that for sufficiently small values of x , the higher-order terms become irrelevant. In other words, on extremely general grounds we know that the shape of the potential for an oscillating system in the vicinity of equilibrium takes the approximate form

$$V(x) \approx cx^2. \quad (3.11)$$

That's just a parabola, the potential for a simple harmonic oscillator. This is a wondrous result: For small deviations from equilibrium, in the absence

of friction, *almost every oscillating system is approximated by a simple harmonic oscillator*.^{*} Our “oscillator” might be a ball rolling near the bottom of a potential, or a weight on a spring near its equilibrium point—but it could be something like the displacement of a pendulum, or an atom wiggling in a molecule, or the amplitude of a sound wave, or the electrical current in a circuit, or the value of the Higgs boson field. As long as it’s a system that can be described in terms of kinetic and potential energy, the potential can be approximated near its minimum as a parabola, and therefore the physical behavior is approximately that of a harmonic oscillator. The equivalence won’t generally be exact; once we start caring about larger deviations from equilibrium, all those other terms in (3.10) will start to matter. But those are complications we can add in later.



This discussion puts some meat on the bones of the spherical-cow philosophy. It’s not just a matter of looking at oversimplified systems and hoping for the best. The idea of taking a complicated expression and writing it as the sum of infinite terms, as in (3.9), is a technique that is applicable to a wide variety of problems. And we are very often fortunate enough that the terms further along in the series are numerically smaller than the first few. This allows us to develop a systematic procedure known as **perturbation theory**: We write the equations governing the system as the sum of something simple plus a tiny perturbation, solve everything exactly for the simple part, then add in the rest bit by bit. Sometimes (not always) the universe helps us along in our attempts to understand it.

PHASE SPACE

According to the Laplacian paradigm, the trajectory of a system is determined by specifying the positions and velocities of each part of the system at some time. And we've said that the momentum of an object is just its mass times its velocity, $\vec{p} = m\vec{v}$. Since usually we consider systems for which the mass is constant, in terms of the information we need to predict the behavior of a system, specifying "position and momentum" is equivalent to specifying "position and velocity." Once we move to more advanced topics in physics—as soon as the next chapter—we'll see why momentum is more fundamental than velocity from a certain perspective, so we'll generally use that.

Together, the set of all possible positions and momenta for a system is known as that system's **phase space**.

$$\text{Phase space} = \{\vec{x}_i, \vec{p}_i\} \text{ for all objects } i.$$

(Curly braces $\{\}$ are often used to denote a set of things.) Specifying where the system is in phase space at any moment is enough to fix its entire evolution according to Newtonian mechanics; in other words, *phase space is the set of all possible states the system could be in.*

As just a small hint to why momentum is more basic than velocity, think about Newton's second law, $\vec{F} = m\vec{a}$. We know that the acceleration is the derivative of velocity with respect to time. And this statement of Newton's principle implicitly assumes that the mass isn't changing with time, it's just a constant. So we can think of $m\vec{a}$ not only as "mass times the derivative of velocity" but equivalently as "the derivative of mass times velocity," since a constant can be brought inside or outside of the derivative:

$$m \frac{d}{dt} \vec{v} = \frac{d}{dt} (m\vec{v}) \text{ [when } m \text{ is constant]},$$

(3.12)

This suggests an elegant way of rewriting Newton’s second law in terms of the derivative of the momentum:

$$\vec{F} = \frac{d\vec{p}}{dt}. \tag{3.13}$$

Not only is this pleasingly compact, it’s more general than $\vec{F} = m\vec{a}$, as this form remains valid even when the mass of the object is changing (for example, as a rocket gradually loses mass by ejecting exhaust). Force is the rate at which momentum is changing with time.

In the world of our experience, objects have locations in three-dimensional space. Mathematicians, and physicists following them, have repurposed the word “space” to mean something much more general—basically, any set with some additional structure. So “the set of all possible positions of a single object” is good old three-dimensional space. But the phase space for that object would be six-dimensional, three for the position and three for the momentum (which is a three-dimensional vector).

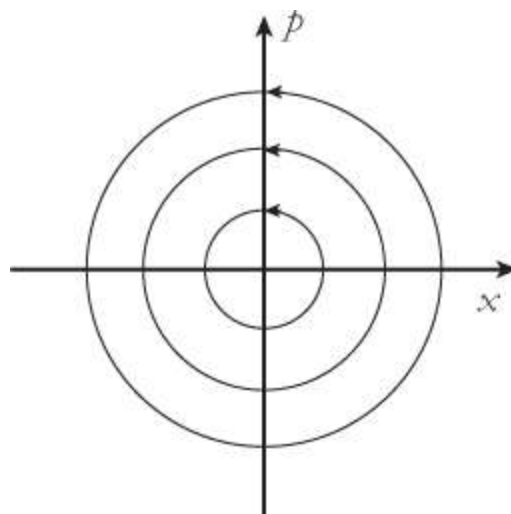
If our system consists of N particles in three-dimensional space, we can speak of the **configuration space** of the system, a $3N$ -dimensional space labeled by the three-dimensional position of each particle. There will be a corresponding $6N$ -dimensional phase space, since each particle will have a three-dimensional momentum as well. The Earth–moon system—two objects moving in three-dimensional space—has a twelve-dimensional phase space. Not to mention that if our objects are more complicated than simple particles, we might need to specify their orientations and angular momenta as well.

In general, phase space can be a very high-dimensional mathematical construction, depending on what kind of system we’re thinking about. The idea was pioneered by Ludwig Boltzmann, James Clerk Maxwell, and other nineteenth-century pioneers of statistical mechanics who regularly contemplated systems with many particles. A traditional measure of “many” is **Avogadro’s number**, 6×10^{23} , which is approximately the number of atoms in one gram of monatomic hydrogen. A gram is small but noticeable on human scales, so anything of that size or greater is safely

macroscopic. A collection with Avogadro's number of particles is described by a 3.6×10^{24} -dimensional phase space. That's pretty big.

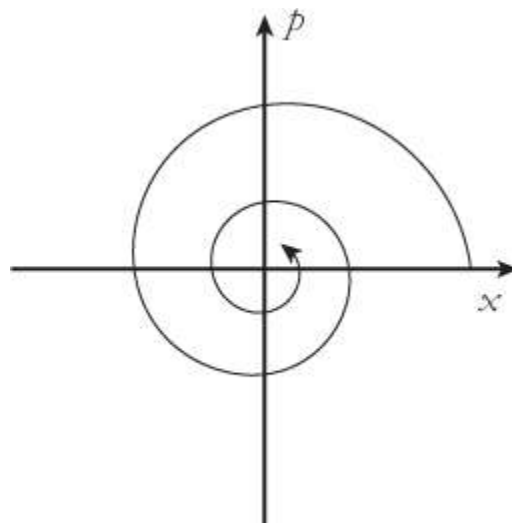


But phase space can also be pretty modest. The simple harmonic oscillator has a one-dimensional configuration space, labeled by its position x , so its phase space is two-dimensional, $\{x, p\}$. That makes it possible to visualize, and it's useful to do so.



Here we have plotted three possible phase-space trajectories of a particular simple harmonic oscillator. The position oscillates back and forth, and so does the momentum, but with different starting points: When the position is at zero, the momentum is at its maximum, and vice versa. So any possible trajectory of the system describes an elliptical orbit in phase space, with ellipses of different sizes corresponding to different initial conditions. (It's an ellipse in phase space, not in real space; in real space the oscillator just goes back and forth. Phase space is a different idea. We don't need to independently specify the "velocity in phase space"—the entire trajectory is fixed by knowing what point you start at.) The frequency of the oscillator is independent of its initial amplitude, so the system takes the same amount of time to go around one circle no matter how big that circle may be.

Just for fun, let's ask what would happen if we added some friction into the system, to give ourselves a damped harmonic oscillator rather than a simple one. We intuitively know what will happen: The oscillator will rock back and forth, but it will lose energy, so the rocking will steadily diminish in amplitude. In the phase-space diagram, this corresponds to replacing our ellipses with spirals that move toward the center.



THE SPACE OF PATHS

That was a good amount of detail about balls rolling on hills and oscillators bouncing back and forth. Let's reward ourselves with something mind-

blowing.

In exploring classical mechanics, we've emphasized the Laplacian paradigm, according to which we specify the state of the system—a point in phase space, giving the position and momentum of every part of the system at one moment in time—and that determines its entire trajectory. Harkening back to the opening of this chapter, this is much like putting on a blindfold and walking in a straight line. We know what we're doing at this moment, and we can chug forward in time from one moment to the next. Physicists think of this kind of procedure as an **initial-value problem**, since we start with some initial conditions and work out everything else from there.

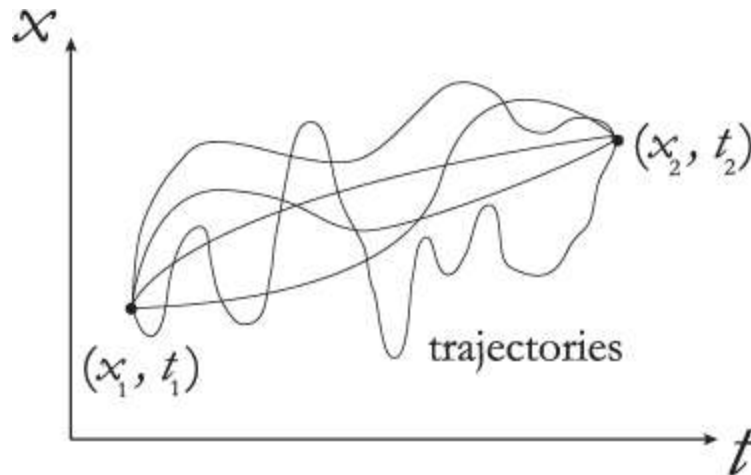
But there are other ways of constructing a straight line, such as pulling a string taut between two trees. To make that line, we didn't have to think about "the initial direction" at all. We just needed the two trees, and pulling the rope between them automatically gave us a straight line pointing in the right direction. That's not an initial-value problem; it's a different kind of boundary-value problem, with one piece of information at the start (the location of the first tree) and another piece at the end (the other tree).

We can describe the string stretched between two trees in terms of global properties rather than local ones. (Recall the distinction between Kepler's theory of planetary orbits and Newton's.) "Walking in the same direction" is a quintessentially local procedure: You do something specific from moment to moment. Whereas "having the shortest length" is a global property: you need to compare the length of the entire string to what it would have been had it not been straight.

What we are implicitly doing is imagining an enormously big mathematical space, the space of all possible ways that a string could extend from one point to another one. Most of these ways will not be straight at all; there is a unique straight path, and an infinite number of curving ones. Within that gigantic set of possibilities, the straight path is distinguished by having a smaller length than any of the others.

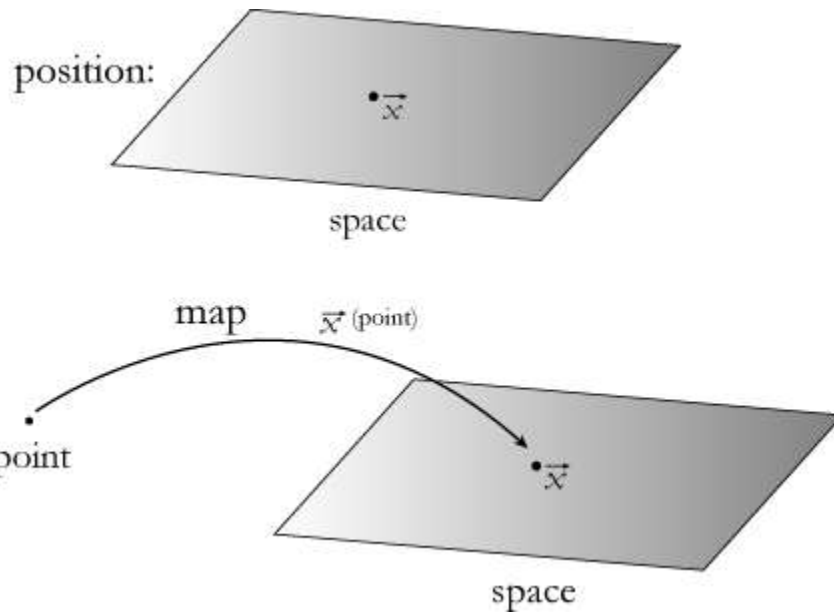
Remarkably, all of classical mechanics can be cast in this kind of global language, rather than the local chug-forward-in-time perspective that we've been adopting thus far. Instead of specifying the position and momentum of a particle at some single moment of time, imagine that we specify just the position x_1 at some initial time t_1 , and also the position x_2 at some later time

t_2 . Just like every curve in space has a length, every conceivable particle trajectory between (x_1, t_1) and (x_2, t_2) has (as we'll see) a quantity called the **action**, which depends on how the kinetic and potential energy evolve along the path. Out of all the possible trajectories the particle could take, the one it actually does take—the trajectory that obeys Newton's laws—turns out to be the one with the smallest action.

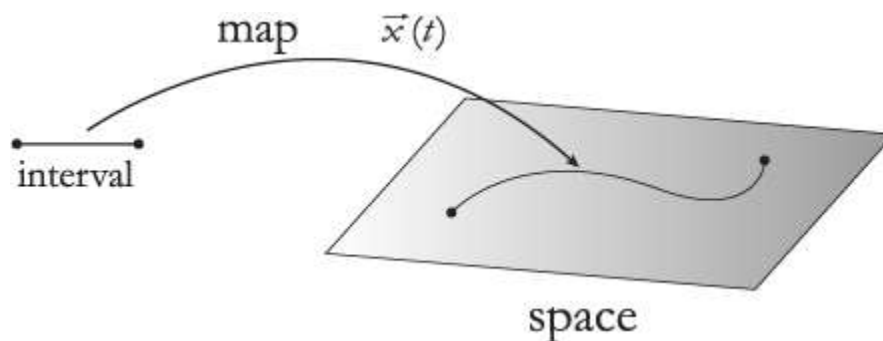


This idea is known, sensibly enough, as the **principle of least action**. This principle was gradually developed over a period of time from the 1600s to the 1800s. The principle of least action represents a departure from how we've been thinking, so let's pause to think about the mathematical philosophy behind it.

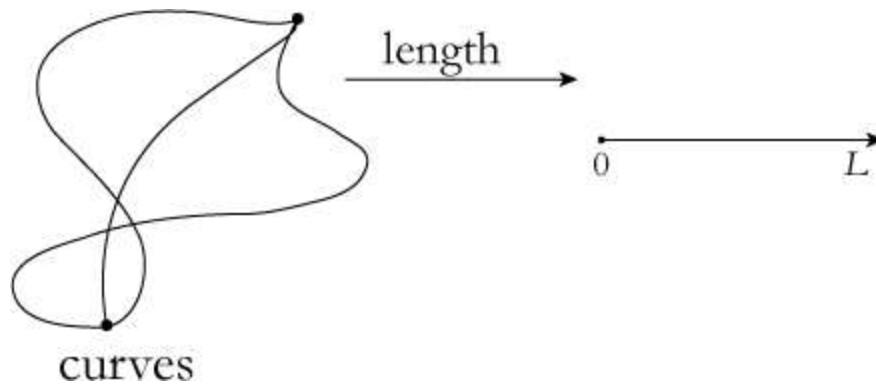
A large amount of maths can be thought of as the study of *spaces and the maps between them*. A simple function $f(x)$, after all, is a map from the set of real numbers to itself. We've already been implicitly using many other examples. When we say "the position of a particle," we typically visualize a point literally embedded in space. But a mathematician would conceptualize that as a map from a single point to three-dimensional space.



Similarly, the trajectory of a particle in space through time can be thought of as a map from an interval into space.



And for that matter, the notion of the length of a curve can be thought of as providing a map from the space of all curves (let's say, between two specified points) to the non-negative real numbers, where each curve is associated with its length L .

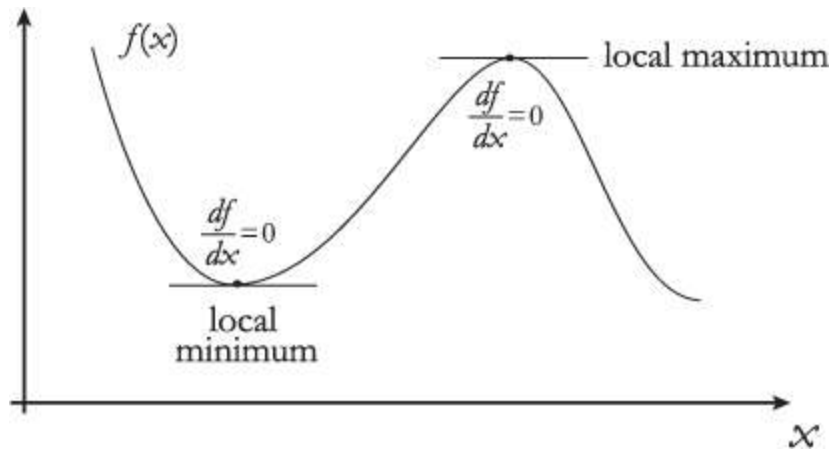


Admittedly, “the space of all curves between two specified points” can be hard to visualize. We usually draw a few representative examples and hope that you can imagine the rest.

A point is a zero-dimensional space, a line is one-dimensional, a plane is two-dimensional, and so on. There is one dimension for each piece of information you need to specify where you are in the space. The space of all curves is therefore *infinite*-dimensional, since specifying a curve is to specify an infinite number of points along it. This creates some interesting mathematical subtleties, but the more notable thing is how much of our ordinary mathematical toolbox works on infinite-dimensional spaces without too much modification.

In particular, there is a way of doing calculus on infinite-dimensional spaces, called the **calculus of variations**. We’re not going to dig into that, as fun as it would be; life is short, and there are a lot of big ideas ahead of us. But I want to mention it because calculus plays a crucial role in this idea of “find the curve of minimum length.”

Think back to a simple function of one variable, $f(x)$. The derivative df/dx gives us the slope of that function at each point. Just from looking at the graph, we notice an important property: At every point where the function is at a local maximum (the top of a hill) or minimum (the bottom of a valley), that derivative is exactly zero.



That's the mathematical secret behind finding curves of minimum length, or any other property. Consider the set of all possible curves. We can define a function on that set (a map from each curve to some number) given by “the length of the curve.” Then take the derivative of that function with respect to all possible ways we can infinitesimally deform the curve. If we're at the minimum, all those derivatives will precisely vanish. So we can turn the verbal idea “shortest-distance path” into a set of mathematical equations, “vanishing of the derivative of the length function on the space of paths.”

LEAST ACTION

But it's not the length of a curve that we're interested in at the moment. When you throw a rock into the air and it follows some trajectory before hitting the ground, it's clear that the rock's path is not a straight line, which would be the shortest-distance path. What's minimized is not the length but the action, so we have to explain what that means.

At every point along its trajectory, a moving particle has a position x and velocity v , and correspondingly a kinetic energy $E_{\text{kinetic}} = \frac{1}{2}mv^2$ and a potential energy $V(x)$. We define the **Lagrangian** $L(x, v)$, after French mathematician Joseph-Louis Lagrange, as the kinetic energy minus the potential:

Lagrangian = kinetic energy – potential energy,

$$L(x, v) = \frac{1}{2}mv^2 - V(x).$$

(3.14)

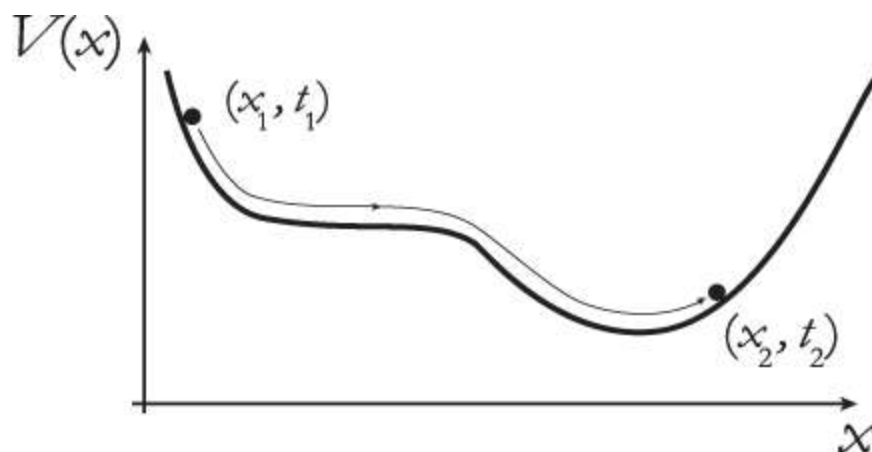
Then given any path $[x(t), v(t)]$, the action S of that path is the integral of the Lagrangian over time:

$$S = \int L(x, v) dt.$$

(3.15)

The Lagrangian has some numerical value at every point along the path—that is, at each time. But the action is not a function of which point you are at on the path; it's a function of the trajectory as a whole. The action for the actual path the particle will take, given its initial and final positions and times, will be smaller than the action would be for any other paths we could imagine between those points. This way of formulating classical mechanics is often known as **Lagrangian mechanics**, since the Lagrangian is the central quantity of interest. The action is the integral of the Lagrangian over time, and the real physical motions are those that minimize the action.

Let's see how the principle of least action works for a particle in a potential. It starts at position x_1 at time t_1 , and ends up at position x_2 at time t_2 .



You might think: “I’ll let the particle go at x_1 and calculate its acceleration using $F = ma$, then integrate up to get the velocity, until it reaches x_2 .” If so, you are still stuck in the Laplacian way of thinking. We can’t just let the particle go with initially zero velocity, because it might reach the final point x_2 at the wrong time. Likewise, there’s no requirement that the ball will *stop* at time t_2 , just that it will be located at x_2 at that moment. The fact that we know the initial and final times as well as the positions is a strong constraint on what the particle can do in between. What the particle will actually do is take the trajectory that minimizes its action subject to those constraints, and that requirement will tell us what the initial velocity will have to be. Maybe it will have to roll up the hill at the start and away from x_2 , just so it doesn’t reach its final destination too early. The velocity will end up being whatever it needs to be to ensure that the particle ends up where it’s supposed to at the appointed time.

What does it mean to minimize the action? The action is the integral of the Lagrangian, which is the kinetic energy minus potential energy. The kinetic energy $\frac{1}{2}mv^2$ is never a negative number, so to minimize the action we want to make the kinetic energy as small as we can. But we can’t keep it exactly at zero—otherwise the particle wouldn’t move, and in particular it wouldn’t reach x_2 in time. It has to move fast enough to travel the right distance in the right time, but not too fast if it can help it.

Meanwhile, minimizing “minus the potential” seems easy enough—just travel up to somewhere where $V(x)$ is really high, so $-V(x)$ is really low.

(For these purposes, a large negative number counts as “low.”) But that comes into tension with the previous paragraph. If we start with the particle at x_1 and it zips off to somewhere the potential is much larger, it will have to quickly zip back to reach x_2 at the right time, and that would contribute a large kinetic energy. We’re trying to keep the integrated kinetic energy as small as we can.

Minimizing the action sets up a balancing act: The potential energy wants to be high, but the kinetic energy wants to be low, and both have to compromise in order to begin and end at the specified points at the specified times. As a result, the trajectory that minimizes the action turns out to be precisely that which satisfies the classical equations of motion. The least-action way of doing things is mathematically equivalent to Newton’s original formulation.

Which is remarkable, when you think about it. Newton’s second law, the principle at the heart of classical mechanics, sets the force acting on an object equal to its mass times its acceleration. In the least-action approach, the word “force” doesn’t even appear anywhere. It’s the same dynamics at the end of the day, but a completely separate set of concepts is deployed to get us there.

So which is right? Does nature really start with some initial state and chug forward from moment to moment, as Laplace would have us believe? Or does nature have some kind of precognition, where it can visualize all the possible motions it might undertake between some initial point and some final point, and choose to move along the one that minimizes the action?

Neither one. Nature just is nature, and it does what it does. We human beings do our best to understand it on our own terms. It might turn out that we discover different equivalent ways to conceptualize the same underlying behavior. In those cases, it’s less important to fret over which one is “right” than to be ready to think in whatever terms offer the most insight into the situation at hand.

* Can you see why it has to be “almost” every? If we’re unlucky we might find a system with $c = d = 0$, for example, when the potential is precisely $V(x) = ex^4$. Then there is no approximation in which the oscillator is harmonic, even for small x .

FOUR

SPACE

So far we've been talking about things that happen—balls that roll down hills, weights that oscillate on springs, planets that orbit the sun. Implicit in all that discussion is the idea of an arena where these happenings take place. That arena is **space**, the collection of all possible locations of things. We've referred to the idea of space repeatedly—there it was, in the very first paragraph of [Chapter 1](#)—without too much deliberation, since presumably you are somewhat familiar with the concept. Now it's time to dig deeper. What properties does space have, and why? Why do we need something called space in the first place?

Some of these questions might have satisfying answers; some might not. What we can do is think about the properties that space has, and how they relate to other features of the physical world. Is space a thing, or just a property of other things? What does it mean to say that space is three-dimensional? And what are the physical behaviors that make it useful to think in terms of space? These questions will lead us to investigate yet another formulation of classical mechanics—after Newtonian mechanics and Lagrangian mechanics, here we will examine a picture called Hamiltonian mechanics. Unlike the other formulations, Hamiltonian mechanics doesn't treat space as special right from the start. It's therefore a helpful context in which to think about the special properties of space.

SUBSTANCE VERSUS RELATION

In the early 1700s, at the dawn of classical mechanics, a great deal of thought was given to the question of what space “really is.” One idea was that space is a **substance** itself, with a separate existence from the things within it. The world, in this view, consists of various kinds of objects, *and* the space in which they are embedded. Space acts as a container for everything inside it.

That seems pretty natural to us, but there is an alternative view: that space isn’t a thing at all, it’s just a way to repackage the fact that any two objects are characterized by a quantity called “the distance between them.” From this perspective, space is fundamentally **relational**. Once you know how all the objects in the world are related by the distances between them, there isn’t any extra thing called “space” in which they reside. Any talk of “space” is just a convenient way of describing those distance relations.

These two opposing views on the nature of space, “substantivalism” and “relationalism,” were taken up in a spirited exchange of letters between Samuel Clarke in England and Gottfried Wilhelm Leibniz in Germany. You will remember Leibniz as the co-discoverer of calculus with, and fierce rival of, Isaac Newton. The two had a number of feisty exchanges, although Newton preferred to work through intermediaries such as Clarke.

The Leibniz–Clarke correspondence was instigated by Caroline of Ansbach, a noblewoman who had been raised in Prussia, where Leibniz was one of her tutors. She moved to England when her husband, George Augustus, became Prince of Wales; later she would become queen when he was crowned King George II. Caroline had an abiding interest in science and philosophy. She became a champion of variolation—a precursor to modern vaccination—after directing a study on its ability to combat smallpox.

After Caroline arrived at the British court to become princess, Leibniz wrote to her to warn against aspects of English philosophy that he considered theologically problematic, especially those of John Locke and of course Isaac Newton. Caroline—mischievously?—brought these criticisms to the attention of Clarke, a prominent Anglican cleric and a friend of Newton’s. Clarke wrote to Leibniz to defend the Newtonian view that space was absolute, against Leibniz’s relational perspective, which had been heavily influenced by Descartes. We know at the very least that Newton

offered advice to Clarke on what to write, although some scholars maintain that the letters were essentially ghostwritten by Newton.

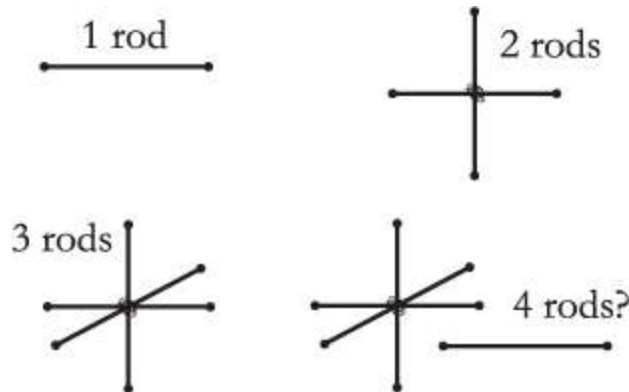
The Leibniz–Clarke correspondence was cut short by Leibniz’s death in 1716, but the surviving letters stand as a major work in the early philosophy of science. They discuss not only the nature of space but also free will and the essence of God. Today, most physicists would come down on the side of Newton, treating space as a thing in itself, for a couple of reasons. First, the space in between objects is not empty; it is filled with fields of various sorts. Second, space (as part of spacetime) has a life of its own; Einstein showed that the geometry of space responds to energy and can change over time, as we will discuss in [Chapter 8](#). But we don’t have the final answer.

And thus, a question that at one time was considered to be absolutely central to the progress of physics gets filed away in a drawer, without quite being answered. Part of the evolution of science is not simply the progress associated with learning new things; there is also the process by which we decide which questions are important, and which can be ignored. Sometimes it’s because the question truly isn’t interesting, other times the time for answering it is just not right. An exciting modern idea is that space emerges out of quantum en-tanglement, rather than being a substance in its own right, so maybe there’s a sense in which relationalism will triumph in the end.

DIMENSIONS

Assuming we have a more-or-less intuitive grasp on what is meant by “space,” let’s consider some of its properties. The most important property is its **dimensionality**. The space through which we move in our everyday lives is three-dimensional. But physicists often look at lower-or higher-dimensional spaces. They might consider one or two spatial dimensions as simplified toy models, or more than three spatial dimensions in string theory or other models of unification. There are also other abstract mathematical “spaces”—sets with some additional structure, like the configuration space or phase space of a system of many particles—that may have a completely different number of dimensions. In this chapter we’re focusing on the good old space around us.

Imagine picking up two long, thin rods. Tie them together so that they are perpendicular (at right angles) to each other. Now pick up a third rod and tie it to the first two at the same intersection such that the new rod is perpendicular to both the ones you started with. Now pick up a fourth rod, and tie it at the same place, so that it is perpendicular to all of the original three.



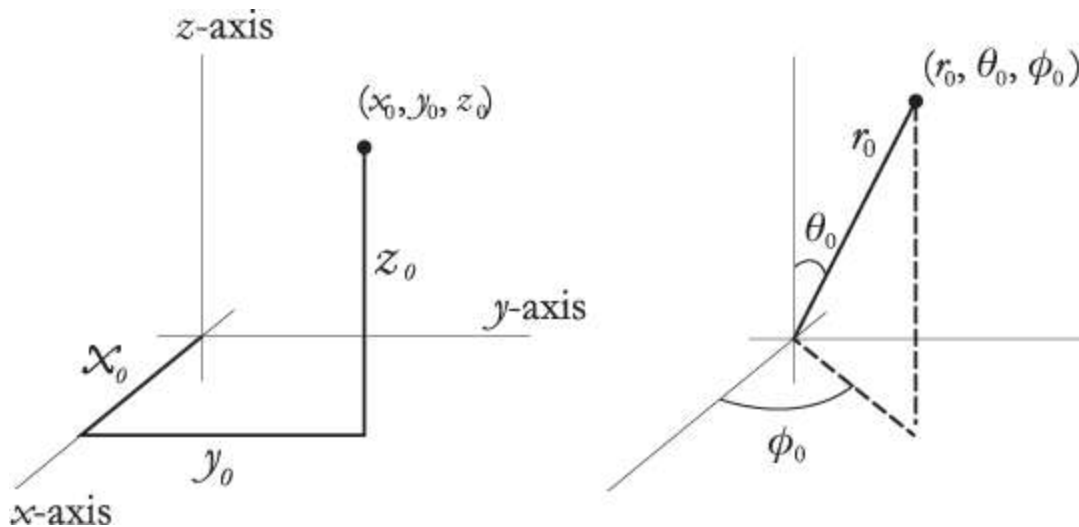
You can't do it. In our world, three lines can be mutually perpendicular to one another, but four cannot. That's one way of demonstrating that space is three-dimensional.

(You might know that a stool requires three legs to be stable. How many legs would be required if space were two-dimensional? Or four, or any other number?)

A dimension, then, is essentially “an independent direction in which things can move.” In this conception, moving either one way or exactly reversed counts as the same direction. Reckoning from your present position, forward/backward is one direction, right/left is another one, and up/down is a third. All of these directions are independent, while other directions can be thought of as combinations of these. Three dimensions.

Another way of expressing the same idea is to note that three numbers, called **coordinates**, are required to specify the location of a point in space. Imagine picking some starting point and extending three abstract perpendicular directions, or **axes** (plural of “axis”), like an imaginary version of our perpendicular rods. We can assign coordinates to any point—for example, (x, y, z) —by traveling from the origin to that point by a series

of straight perpendicular line segments, then measuring the length of each segment.



What's important is not the particular coordinate system that we use but the fact that it always takes three numbers to specify the location of a point. The set of perpendicular axes defines **Cartesian coordinates**, named after René Descartes. But we could also specify the same point by measuring r , the distance from a radial segment from the origin to the point; θ (Greek “theta”), the polar angle between that radial segment and the z -axis; and φ (Greek “phi”), the azimuthal angle between the x -axis and the projection of our point down to the xy -plane. These are called **spherical coordinates**, since the set of all points at some fixed value of r defines a sphere.

Coordinates are not objective features of the world. They are human inventions, labels we attach to different locations in space. The rule of thumb is that no physical quantity should depend on what coordinates you use, just as the physical length of an object doesn't depend on whether it's expressed in centimeters or in inches. This property of **coordinate invariance** seems pretty straightforward, but souped-up versions of it lead us to contemplate symmetries and gauge theories, which play a central role in modern fundamental physics.

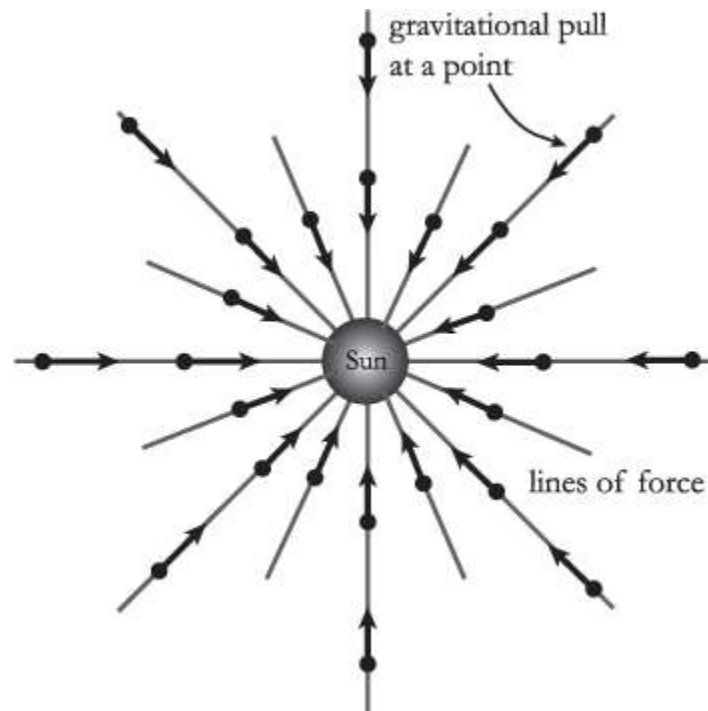
If space is three-dimensional, subsets of space can be lower-dimensional, at least to a good approximation. Consider a long, straight conducting wire. It's really three-dimensional, of course; if we look closely, we can see that

the wire has a non-zero cross section. But when we look at it from far away, it appears essentially one-dimensional. If electrons moving along the wire tend to move rapidly and freely along its length, and only with great difficulty or not at all in the perpendicular directions, physicists will happily model that system as if it were one-dimensional. Likewise, there are cases when interesting phenomena are confined to two-dimensional spaces like thin films or the surface of a three-dimensional object; in that case we can often profitably treat the relevant phenomena as if they really lived in a two-dimensional world. This is the spherical-cow philosophy in action, approximating a complicated system as one that is so much simpler that entire dimensions disappear.

DIMENSIONS AND FORCES

Life would be quite different—indeed, biological life might not even be possible—if space really did have a different number of dimensions. Consider one of our favorite physical forces, gravity, described by Newton’s inverse-square law: The gravitational force between two objects is inversely proportional to the square of the distance between them. Why is it the inverse of the square of the distance? Why not just the distance itself, or the distance to the eighteenth power?

A simple visualization is helpful here. Conjure in your mind’s eye a set of straight lines stretching from the sun out to infinity in all directions. These are **lines of force**, so called because the gravitational force from the sun pulls objects along them. They’re purely conceptual—there aren’t really physical lines of anything stretching from the sun. But visualizing how these lines spread apart helps explain the inverse-square law.



If we draw a sphere centered on the sun, the lines of force all pass through that sphere. If we draw another sphere with a bigger radius, the same lines will pass through it, but they will be more spread out—fewer lines will pass through any fixed area of the sphere.

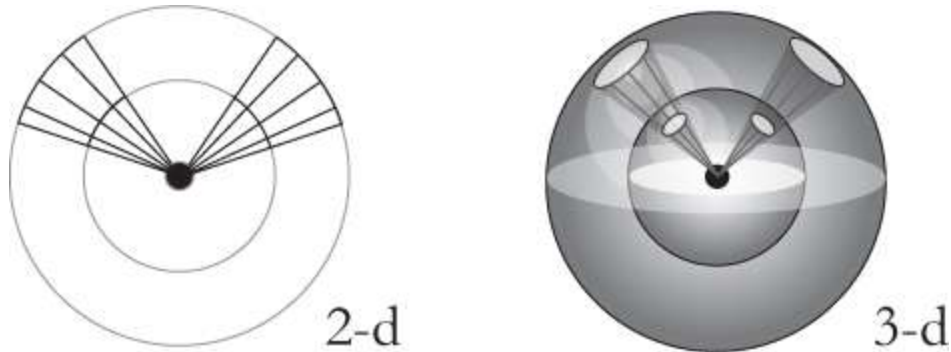
The total area A of a sphere is related to its radius r by $A = 4\pi r^2$. The 4π in a formula like this is something we usually just memorize, but the fact that the area is proportional to r^2 just comes down to **dimensional analysis**. Physical quantities are always expressed in terms of **units**—length, time, mass, or some combination thereof.* Whenever we add things together, or equate them to one another, they need to have the same units.

Area always has units of “distance squared” (because it’s a two-dimensional quantity), and the only distance involved in the question we’re asking (what is the area of a sphere of radius r ?) is the radius. So of course area is going to be proportional to r^2 ; there’s nothing else it could be. Likewise, its circumference is measured in units of distance, so it will be proportional to r (it’s $2\pi r$).

Gravitational lines of force don’t begin or end in empty space; they originate at massive objects, which are the sources of gravity. So as we consider the lines emanating from the sun, it’s the same total number

passing through each sphere at different radii. The area of those spheres goes up as r^2 . As a result, lines that were densely packed near the sun become more spread out as we move farther away. In particular, the density of lines goes down as $1/r^2$. And the number of lines passing through some object is proportional to the strength of the gravitational force.

That's the inverse-square law, right there. The force felt by an object is simply proportional to the density of force lines passing near it, which decreases as the reciprocal of the distance squared, because the lines are spread across a sphere whose area goes up as the distance squared. (The same logic explains how objects look dimmer when we are far away, if we simply replace “lines of force” with “rays of light.”)



Things would be very different if space had a different number of dimensions. In two-dimensional space, an object would be enclosed by a one-dimensional circle rather than a two-dimensional sphere. So the density of force lines, and therefore the strength of the gravitational pull, would diminish as just the inverse distance, rather than the inverse distance squared. On the other hand, in four-dimensional space an object would be enclosed by a three-dimensional hyper-sphere. (This is the point where it's hard to visualize things, and we have to rely directly on the mathematics.) So gravity would obey an inverse-cube law. In general, in a universe where space is d -dimensional, the force of gravity is proportional to $1/r^{d-1}$.

Thought of this way, it seems almost inevitable that forces of nature should obey inverse-square laws. But they don't—at least, not all the time. At the level of elementary particles, there is a “strong nuclear force” and a “weak nuclear force” that reach over very short ranges before quickly

diminishing to almost nothing. The reasons are different in each case. For the strong nuclear force, lines of force become tangled up with one another rather than stretching to infinity; for the weak nuclear force, the lines seem to gradually attenuate, but it's really because they are being absorbed by a Higgs field pervading all of space. Nobody ever said nature would be tidy.

There is one famous example, besides gravity, of an inverse-square law: electromagnetism. The electric field of a charged particle generates lines of force that extend to infinity (unless they bump into other charged particles, which often happens). As a result, the strength of the electric force obeys an inverse-square law, in this case known as **Coulomb's law**. At least in three-dimensional space.

The idea of lines of force was first suggested by Michael Faraday in the mid-nineteenth century, in the context of electromagnetism. Faraday was born into a poor family, the son of a village blacksmith. As a teenager he became the apprentice to a local bookseller, which gave him the opportunity to educate himself through reading. He became attached to the Royal Institution in London, first working on chemistry (he was the discoverer of benzene, as well as inventor of an early version of the Bunsen burner) before becoming captivated by electricity and magnetism. His work in that field set the stage for James Clerk Maxwell eventually bringing those phenomena together into a unified theory of electromagnetism. Maxwell had the mathematical background to codify Faraday's physical insights into a system of rigorous equations.

MOMENTUM AND VELOCITY RECONSIDERED

What is it that makes space, "space"? That is, what are the properties the world has that tempt us into describing it as "stuff, distributed through space"? (And evolving through time, but we'll leave that for the next chapter.)

To address this question, let's do one of our favorite things: introduce a new way of thinking about classical mechanics. We already have the Newtonian way of doing classical mechanics, which is to specify the positions and velocities of parts of a system and use Newton's laws to evolve them through time. And we have Lagrangian mechanics with the principle of least action, which tells us to imagine all of the paths a system

could take between specified initial and final conditions, and pick out the one with the least action as the one the system actually takes.

Our third way of formulating classical mechanics is **Hamiltonian mechanics**. Its central idea is to elevate “momentum” to a concept with an existence of its own, independent of “velocity.” This move can be a little tricky, because at first glance it seems almost indistinguishable from the Newtonian formalism, but it’s different (and more powerful) in subtle ways. And those ways will be crucial for understanding why space is such an important concept.

In the last chapter we talked about phase space, the set of all possible positions and momenta that a system could have. According to the Laplacian paradigm, specifying one point in phase space at one moment in time is enough to determine the entire trajectory of a system (at least, one that is shielded from outside influences). And even though we used momentum as part of phase space, we know that within Newtonian mechanics momentum and velocity are interchangeable, since they are related by $\vec{p} = m\vec{v}$.

As successful as that picture is, there is a tiny bit of weirdness about it, so small that we didn’t even remark on it at the time. Namely: the whole point of the Laplacian paradigm is that we tell you the state of the system at a single moment in time, and from there we determine the rest of the trajectory. But is “the velocity” really something defined at a single moment in time? Velocity is the derivative of position: the rate of change of position with respect to time. To calculate that derivative, we need to look beyond the single moment itself, to ask what the system is doing a moment later. Even if that moment is just infinitesimally later than the original one, it still seems like we are peeking just a bit at other moments in time, which fits awkwardly with the Laplacian philosophy.

HAMILTONIAN MECHANICS

The Hamiltonian approach resolves this awkwardness in an elegant way. Once again, we start with phase space, considered as the set of all positions and momenta a system could have. But now we insist that it really is the momentum vector we’re talking about, not the velocity. In fact, from the

Hamiltonian perspective, we *do not* define the momentum to be mass times velocity. The momentum is taken as a completely independent concept, equal in status to the position as the two things you need to specify to fix a point in phase space. A particle (or more complicated system) has a location in space, and it also comes with a vector property, “the momentum.” This is true at any single moment in time, and we don’t need to think about other moments in time, since for right now we’re not thinking of the momentum as related to the rate of change of anything.

Here is how Hamiltonian dynamics works: Start with phase space, the set of all coordinates x and momenta p . (For simplicity we won’t worry about using arrows over letters to denote vectors, or subscripts indicating which part of the system we’re talking about; imagine that those are implicit.) Then we define a function, called the **Hamiltonian**, $H(x, p)$. The Hamiltonian is basically the energy of the system, written in terms of the positions and momenta.

We know that the potential energy of the system depends only on the positions, so we write it as $V(x)$. Then we have the kinetic energy, which in Newtonian mechanics we would write as $K = \frac{1}{2}mv^2$. But we’d like to write that in terms of the momentum, not the velocity. In Newtonian mechanics the momentum and velocity are related by $p = mv$. So we can get an expression for the kinetic energy in terms of momentum by substituting in $v = p/m$ to obtain $K = p^2/(2m)$. Altogether, then, we can write

Hamiltonian = kinetic energy + potential energy:

$$H(x, p) = \frac{p^2}{2m} + V(x). \tag{4.1}$$

So far, we’ve just done some manipulations to rewrite the energy in terms of position and momentum (rather than velocity). The cool new thing is that we can derive the equations of motion for the system from just this one expression. We’ll explain how to do that in just a bit, but for now let’s skip to the answers so we can get a bit of a payoff.

In Newtonian mechanics we track the evolution of just one variable, the position $x(t)$ as a function of time. Things like the velocity and acceleration are defined in terms of that variable (as the first and second derivative, respectively). There is correspondingly just one equation needed to figure out what happens, $F = ma$. But in Hamiltonian mechanics there are two variables, $x(t)$ and $p(t)$. So now we need two equations. And indeed we have them: equations for the derivatives of the momentum and the position, given by

$$\frac{dp}{dt} = -\frac{dV}{dx} \tag{4.2}$$

and

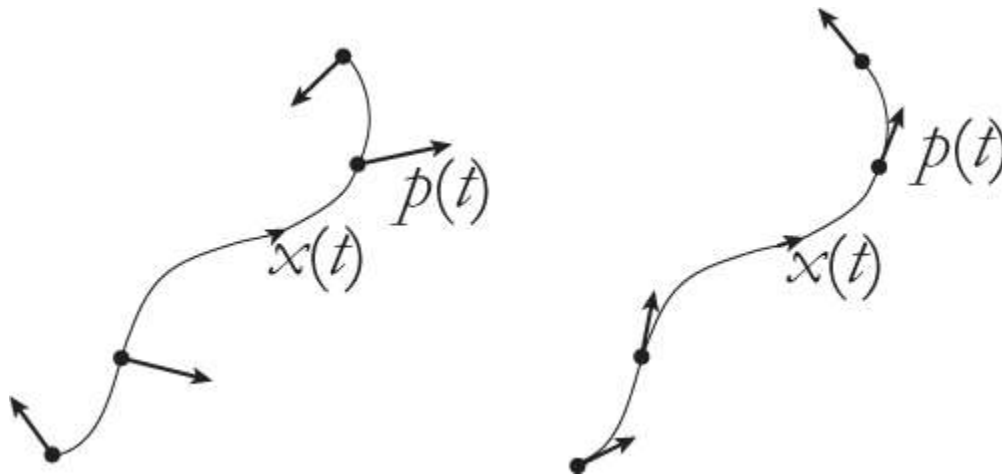
$$\frac{dx}{dt} = \frac{p}{m}. \tag{4.3}$$

The first of these equations is familiar—it's just Newton's second law $F = ma$ in different notation. Remember from (3.13) that we can replace ma with dp/dt , and from (3.3) we know that the force is minus the derivative of the potential with respect to position. The second equation, (4.3), is also familiar—it's just a rewrite of $p = mv$, momentum is mass times velocity. But the *interpretation* of this equation is different, and the difference is crucial. To grasp the distinction is to appreciate Hamiltonian mechanics in your bones.

In the Newtonian perspective, the fundamental object is $x(t)$, the path defined by position as a function of time. From that, everything follows; we can take a derivative to get the velocity, and we define momentum as mass times velocity. Momentum is not defined that way in Hamiltonian mechanics; it is a variable in its own right. The relationship (4.3) looks the same in both approaches, but from the Hamiltonian perspective it is an

equation of motion—a relationship that holds true on actual, physically realistic paths, not something true by definition.

What's the difference between a definition and an equation of motion? A definition implies an inevitability to the relation; in Newtonian mechanics, there is nothing the momentum could have been other than mass times velocity, since that's what it was defined to be. An equation of motion, by contrast, picks out the “right” relationship between variables, even though we can imagine them taking on other (wrong) values.



Two trajectories in phase space, by which we mean a point in space $x(t)$ and a momentum $p(t)$ for each time t . On the left, the momentum vectors are not proportional to the velocity—they can't be, since they don't point along the spatial path—so this trajectory does not obey the equations of motion, whereas the one on the right does.

In Hamiltonian mechanics, momentum has an existence independent of velocity. We are free to imagine any trajectories for the position and for the momentum, $x(t)$ and $p(t)$, including ones where p is not equal to mv . In the space of all conceivable behaviors, there is no necessary relationship between position and momentum. But there are certain special trajectories, those that obey the equations of motion. And on *those* trajectories, momentum equals mass times velocity.

If your brain insists on thinking of momentum as mass times velocity, imagine replacing “momentum” in the above discussion with some other

label, like “purpleness.” Then Hamiltonian mechanics says that the state of a system at any one time is defined by its position and its purpleness vector. On physical trajectories that obey the equations of motion, purpleness happens to equal mass times velocity, but we can imagine ones where it doesn’t. It’s somewhat inconvenient that we used the label “momentum” for both the independent variable in phase space in the Hamiltonian picture and for mass times velocity in the Newtonian picture; they’re numerically equal when a trajectory obeys the equation of motion, but they’re conceptually distinct.

HAMILTON’S EQUATIONS

That’s the philosophy of Hamiltonian mechanics: Treat position and momentum as two conceptually distinct variables, and determine equations of motion for each of them. The “Hamiltonian” itself is simply the energy of the system, expressed as a function of position and momentum (and not as a function of velocity or other derivatives). The idea is that we should be able to use the explicit expression for the Hamiltonian, (4.1), to derive equations of motion for momentum (4.2) and position (4.3). How exactly does that work?

Let’s think about the equation of motion for momentum, (4.2). It says that the rate of change of momentum with time is equal to (minus) the slope of the potential-energy function. This is morally equivalent to Newton’s second law, $F = ma$, since the slope of the potential is (minus) the force on the object. We can think of momentum as being pushed around by the way the potential energy changes with position. That makes physical sense: If the potential were completely flat (zero slope, like a ball rolling on a featureless table), momentum would be conserved.

But the potential energy, we notice, is one of the two terms in the Hamiltonian. The other is the kinetic energy, $p^2/2m$. If momentum is pushed around by the slope of the potential energy, maybe there’s a nice kind of symmetry where position is pushed around by the slope of the kinetic energy?

That’s exactly what happens. Remember from back in equation (2.7) that the derivative of x^2 with respect to x is $2x$. That works no matter what

variable we are considering, so, for example, the derivative of p^2 with respect to p is $2p$. The derivative of the kinetic energy with respect to the momentum is therefore

$$\begin{aligned}\frac{d}{dp}\left(\frac{p^2}{2m}\right) &= \frac{1}{2m} \frac{d}{dp}(p^2) \\ &= \frac{1}{2m}(2p) \\ &= \frac{p}{m}.\end{aligned}\tag{4.4}$$

(Whenever we take the derivative of a function, constants like $2m$ just go along for the ride; in this case, there are two factors of 2 that cancel each other out.)

Interesting! Just as we had speculated, taking the derivative of the kinetic energy with respect to momentum gives us the right-hand side of (4.3), the equation of motion for the position. There is an annoying minus sign in one of the equations and not the other, but roughly speaking the momentum is pushed around by changes in the potential energy, and the position is pushed around by changes in the kinetic energy. To summarize:

Rate of change of momentum with time = Minus the slope of
potential energy with respect to position;
Rate of change of position with time = Slope of kinetic energy
with respect to momentum.

Together, these two relations are known as **Hamilton's equations**.

It's a beautiful structure, but there's a technical point we need to think about a little more. To keep things concrete, we've been focusing on a single particle moving in a one-dimensional potential, a standard and

illustrative toy model. In that case, the Hamiltonian is given by the sum of the kinetic and potential energies, as in (4.1).

But the formalism of Hamiltonian mechanics is much more general than that. The Hamiltonian of a system will always be a function of some set of coordinates and their corresponding momenta, but there is a lot of freedom in what the actual function is. We can have any number of positions and momenta; in field theory there will be an infinite number. For that matter we are allowed to consider quite complicated Hamiltonians, even ones where positions and momenta mix together so that it's not possible to distinguish between "potential energy" and "kinetic energy." Much of modern physics consists of guessing the right Hamiltonian for a system of interest; once you get that, you know how the system will behave. We need to think a bit more generally.

PARTIAL DERIVATIVES

What we want is a version of Hamilton's equations that works for any Hamiltonian whatsoever. And to get that, we're going to have to introduce one last bit of calculus: **partial derivatives**.

We need this new technology because we want to derive our equations of motion from a single expression, the total Hamiltonian, rather than the potential energy and kinetic energy separately. But unlike the potential energy, which depends only on x , or the kinetic energy, which depends only on p , the Hamiltonian depends on both x and p at the same time. We need to be able to take the derivative of a function of more than one variable.

The derivative of a function is just its slope at each point. But when the function depends on two or more variables, we don't simply have a curve with a unique slope at each point. It's more like a meandering landscape, where there is more than one direction we could move in. Some directions would take us upward, some downward, some would stay at the same elevation. We're going to have to be more nuanced than just defining "the slope" once and for all.

Partial derivatives provide a clever answer to this question. Consider a simple function of two variables, x and y , given by x times y^2 times a constant, a :

$$f(x, y) = axy^2. \tag{4.5}$$

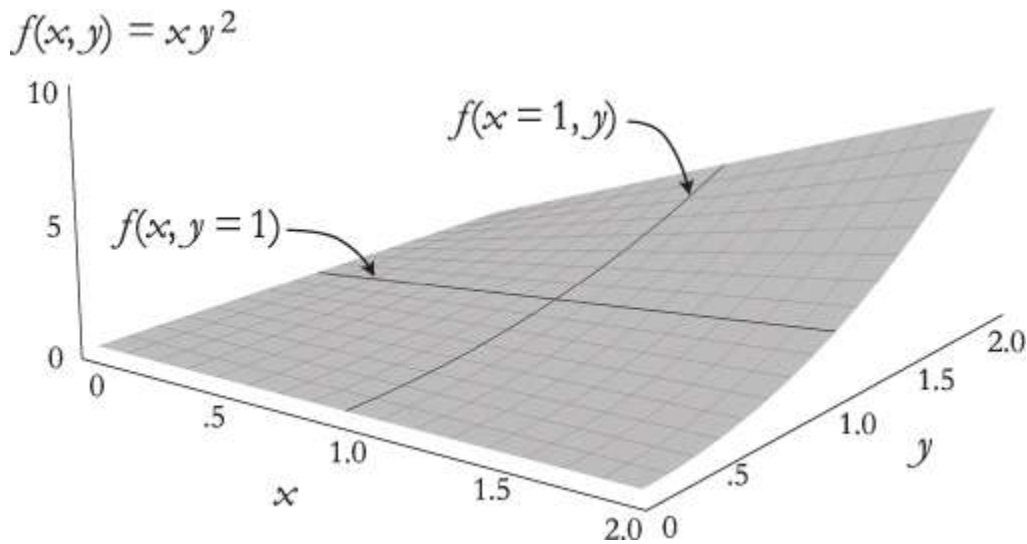
The idea behind partial derivatives is that when we have a function of several variables, we can take turns with them. That is, we take derivatives with respect to each variable separately, and when we do that, we treat all the other variables as if they were constants. And to let people know that's what we're doing, we replace the d in our derivatives by a new symbol: ∂ . (Sometimes called “del,” but that word is also used for other symbols, so it's best just to call it “partial” when you're reading out loud.)

There are thus two different partial derivatives we can take of $f(x, y)$: the partial with respect to x , and the partial with respect to y . When we take the partial with respect to x , we differentiate with respect to x while treating both a and y as constants. This gives us

$$\frac{\partial}{\partial x}(axy^2) = ay^2 \frac{d}{dx}(x) = ay^2. \tag{4.6}$$

Whereas, when we take the partial with respect to y , we treat a and x as constants, and end up with

$$\frac{\partial}{\partial y}(axy^2) = ax \frac{d}{dy}(y^2) = 2axy. \tag{4.7}$$



A function of two variables, $f(x, y) = xy^2$. We can take a partial derivative with respect to x by thinking of y as a constant and differentiating the resulting function; likewise we can take a partial derivative with respect to y by thinking of x as a constant.

That's basically it. To take a partial derivative, you specify which variable you're differentiating with respect to, and you treat all the others as if they were constants (and therefore unaffected by the derivative operation). The task of actually solving partial differential equations can be wickedly difficult—people devote their entire professional lives to coming up with better ways of doing it—but we don't care so much about that here. We just want to be able to see where Hamilton's equations of motion come from.

Now we can put it all together. We know that we can get equations of motion for momentum and position by taking the derivative of the potential and kinetic energy, respectively. And the Hamiltonian is the total energy, so (in this simple example) the sum of those two. Partial derivatives let us take derivatives of each variable separately. We can therefore present Hamilton's equations in their full generality:

$$\frac{dp}{dt} = -\frac{\partial H}{\partial x}, \quad \frac{dx}{dt} = \frac{\partial H}{\partial p}.$$

I promise there are no typos. There really is a minus sign in the first equation but not the second one. There are reasons for this, but they are lurking deep within parts of mathematics that we won't be going into here. (Look up “symplectic geometry” if you're interested.) And there really are ordinary derivatives with d 's on the left-hand side of each equation, and partial derivatives with ∂ 's on the right-hand side. That's because position and momentum are functions of just one variable—time—whereas the Hamiltonian is a function of both position and momentum, so we need partial derivatives that specify what we're differentiating with respect to.

It's an elegant approach. In the Newtonian philosophy, each part of the system would have an equation of motion, describing which forces were acting on it. After the fact, we could show that certain quantities like “energy” were conserved. In the Hamiltonian philosophy, by contrast, we write down just one equation—an expression for the Hamiltonian, the total energy as a function of position and momentum. From that we can derive all the necessary equations of motion. This continues to be true when we have much more complicated systems, featuring multiple parts interacting in any number of ways. There will still be just one Hamiltonian describing the whole shebang; everything about the dynamics is implicit in that expression. Newtonian mechanics, Lagrangian mechanics, and Hamiltonian mechanics are equivalent as physical theories, but taking one approach or the other might make our lives easier in different circumstances.

I did say there would be no homework, but if you wanted to get your hands dirty you could work out the explicit form of Hamilton's equations for the simple harmonic oscillator, where the potential energy is $V(x) = \frac{1}{2}\omega^2 x^2$. Or even make up your own Hamiltonian—perhaps two oscillators, with some kind of interaction between them?—and see what happens.

LOCALITY

Who cares? Why are we putting ourselves through all of this mathematical effort just to derive a set of equations that, at the end of the day, just

recapitulate Newtonian mechanics in a more intimidating notation?

There are many reasons to become comfortable with the Hamiltonian version of mechanics, not least of which is that it becomes indispensable when we make the transition to quantum mechanics. But for our present purposes, thinking in this way helps us see what is so special about space.

From the Newtonian perspective, “space”—that is, “position space,” the set of all possible locations—is clearly special from the start. We can think about “momentum space,” the set of possible momenta, but it seems a bit abstract, unlike the straightforward nature of position space. We live in position space, after all, not in momentum space.

But when we turn to the Hamiltonian perspective, positions and momenta seem to be on the same footing, at least to start. They are the two coordinates on phase space. The Hamiltonian itself is a function of both x and p . And when we look at Hamilton’s equations (4.8), position and momentum are nearly symmetric (other than that minus sign). As far as the general structure of Hamiltonian mechanics is concerned, the Hamiltonian could be any function $H(x, p)$ at all. There’s nothing in the formalism that distinguishes between position and momentum to indicate “this is the one where we live.”

So in this setting we can ask a question that wouldn’t even have occurred to Newton or his immediate successors: What’s so special about space? Why do position and momentum seem so different to us in practice if they appear somewhat equally in the Hamiltonian laws of physics? Why do we live in position space, and not in momentum space?

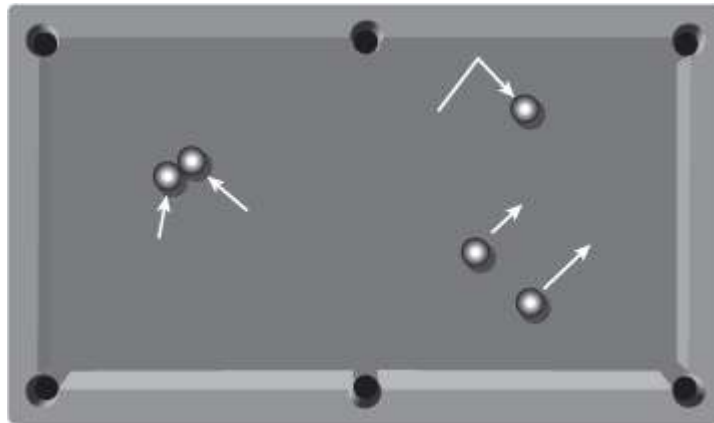
The thing that makes space special is that interactions are **local** in position. Objects directly interact with one another when they are in the same location, not when they have the same momentum (or whatever). This might not be obvious—doesn’t the gravitational force from the sun stretch across space to the planets?—so we have to think about it a bit.

As physicists, it’s fun to talk about the behavior of a single system all by itself. But that’s pretty meaningless if we can’t also imagine observing the system and figuring out what it’s doing. Ultimately we need to describe multiple systems interacting, influencing and being influenced by one another. And it’s a feature of the universe in which we live that systems generally interact when they are next to one another in space. That’s what physicists mean by “locality”: Doing something at a particular point in

space only affects other things at or next to that point. Eventually those effects can ripple out to other locations, but that takes time.

Think of billiard balls rolling around a table. They generally move on a straight line (unless we're doing a trick shot with significant spin on the ball) until they collide with the bumpers or another ball. And that happens when they come to the same location in space. It doesn't matter what their momentum is; two balls with equal momenta (or opposite, or any other particular relationship) will have no special influence on each other.

This fact about interactions in the real world is reflected in the Hamiltonians that end up describing real-world systems. In principle, the Hamiltonian of a physical system could be any function of x and p . But in practice, we find systems that are described by Hamiltonians that look like (4.1)—a standard kinetic-energy term proportional to p^2 , and a potential-energy term that depends only on x , but perhaps with a complicated functional form.



Billiard balls will interact when they come into contact with another ball or a bumper at the same location in space. Nothing special happens when two balls have the same momentum.

This pattern continues when we move to systems with multiple moving parts. Consider two objects described by positions x_1 and x_2 and momenta p_1 and p_2 . Almost all the time, the Hamiltonian is going to end up looking like

$$H(x_1, p_1, x_2, p_2) = \frac{p_1^2}{2m_1} + \frac{p_2^2}{2m_2} + V(x_1, x_2). \quad (4.9)$$

We recognize the first two terms on the right-hand side as the individual kinetic energies of the two objects. The potential energy $V(x_1, x_2)$ depends on the positions of both objects in some way. If we're talking about billiard balls, the potential will be zero unless the balls are literally hitting each other. If we're talking about two planets interacting via gravity, their potential energy will be zero when the distance between them is very large, and it becomes appreciable when they get closer. The important thing is that distance in space is what determines the strength with which things interact.

These are all rules of thumb that apply to typical real-world systems, although there are some exceptions. The point is that, while we are free to imagine all kinds of crazy Hamiltonians, real physical systems are not so arbitrary. Objects have their own kinetic energy, and they interact with other objects via potential energy that depends on how close they approach.

This is why positions are different from momenta, and therefore why we think we live in space and not in momentum space. In real-world Hamiltonians, position is the variable in which interactions are local.

ACTION AT A DISTANCE

There is one subtlety here that we shouldn't just gloss over. For billiard balls, interactions are precisely local in space: The balls have no influence over each other right up to the point where they come into contact. But for gravity, the interaction does seem to stretch over some distance, even if it grows weaker as the distance goes up. Is that really "locality" as we've defined it?

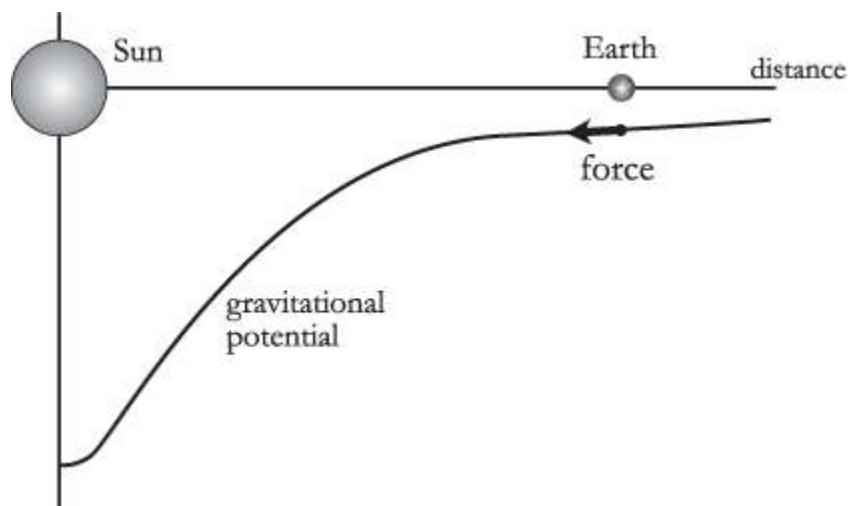
Good question. Newton and his contemporaries spent a lot of time fretting about it. Many were convinced that the gravitational force should be mediated by some kind of substance in between the objects, rather than stretching effortlessly across space. They had implicitly accepted the idea of locality, and they worried that "action at a distance" shouldn't be part of a well-formulated theory. Newton himself agreed, calling the notion "so great

an absurdity that I believe no man who has in philosophical matters a competent faculty of thinking can ever fall into it.” But it seemed to work, and Newton was nothing if not practical. So figuring out what ultimately was going on was something that he “left to the consideration of [his] readers.”*

You’ll be pleased to know that subsequent generations have considered it, and for the most part we have it figured out. The idea is to realize that space isn’t empty, but that instead it is filled with **fields**, one of which is responsible for gravity.

A field is basically a function of space itself: At every point, the field takes on a certain value. Depending on the kind of field we’re talking about, that value might be a number, or a vector, or something more complicated. There is the electric field, the magnetic field, the gravitational field, and various others. In modern physics, fields are the fundamental building blocks of reality (to the best of our current knowledge).

From the field point of view, the sun doesn’t magically reach across space to exert a gravitational pull on each of the planets. Rather, it influences the gravitational field at its location, and the value of the field at each location influences the value at all locations immediately nearby. By concatenating all of these influences together—calculus!—we can determine the strength of the gravitational pull.



Fields and particles are complementary notions. A particle is characterized by its location in space: It is at this one place, and nowhere else. A field, by contrast, is everywhere; any field has a value at each spatial location. At any point in space, each field is being pushed around by other fields, but only by the values (and derivatives) of other fields *at precisely the same point in space*. The value of one field at point *A* has no direct influence on what happens at point *B*; there can only be an indirect influence, mediated by changes in the field that pass between the two points.

It was our old friend Pierre-Simon Laplace who first figured out how this could work for gravity. He posited the idea of a **gravitational potential field** filling space. This potential is related to the Newtonian gravitational force in the same way that the potential energy on a hilly landscape is related to the force on a rolling ball: The force is the derivative of the potential.

Laplace suggested two equations: one that determines how the values of the field respond to massive objects, and another that shows how the field pushed the objects around. In Laplace's picture, the sun creates a depression in the gravitational potential, which gradually relaxes as we move farther away from all of that mass. That relaxation implies a slope to the field, which the planets experience as the force of gravity. The predictions made by Laplace's theory are completely equivalent to those in Newton's, but with a different vocabulary to describe it.

Laplace's equations are precisely local: What happens at one point in space is only affected by what's happening immediately nearby. But one feature that is distasteful to modern sensibilities is that any change in the gravitational field will propagate instantly throughout the entire universe. If you pick up a bowling ball and move it from one place to another, the gravitational field caused by the ball slightly changes; if Newton and Laplace had been right, that change could be detected right away by a sufficiently sensitive detector on the other side of the galaxy.

These days, having been trained by Einstein's theory of relativity, that kind of instant transmission of information seems wrong to us. Signals shouldn't be able to travel faster than the speed of light. And indeed, Einstein was eventually able to replace the Newton/Laplace picture of gravity with his own theory, general relativity. General relativity once again

posits a field in spacetime that explains the force of gravity, but it's a bit more mathematically complicated. Happily, it's as local as we could ever wish: The field itself is influenced only by what is happening in the neighborhood of each point, and any change in the field spreads only at the speed of light or slower.

One last point about locality before we move on. In modern physics, the phrase “action at a distance” is often modified by the adjective “spooky,” in the memorable phrasing of Albert Einstein. By the time the twentieth century had rolled around, locality was pretty well in-grained in how physicists think about the world, so any sort of action at a distance would have been considered spooky. General relativity managed to rid our understanding of gravity of any such worries. But general relativity is still a classical theory, as opposed to a quantum one. What Einstein realized was that the advent of quantum mechanics opened the door to a new kind of action at a distance, resulting from measurements of entangled quantum particles. The effect he proposed is real and has been verified experimentally. But nature is sufficiently subtle that no useful information ever travels faster than the speed of light. So quantum mechanics leaves us in a weird situation where we have to use nonlocal concepts to explain what we observe but can't take advantage of them to send signals across space.

* Units are sometimes called dimensions, hence the name “dimensional analysis.” But we'll reserve the word “dimensions” for the number of independent directions in which objects can move.

* Letter from Isaac Newton to Richard Bentley, February 25, 1692. The Newton Project, <http://www.newtonproject.ox.ac.uk/view/texts/normalized/THEM00258/>.

FIVE

TIME

We motivated our consideration of “space” by noting that it is the arena in which things happen. But “happen” implies transformation over **time**—something hadn’t yet happened, then it was happening, then it had happened. If there were no time, there would be no motion, no evolution, no change. Everything interesting about the universe owes its existence to the passage of time.

Sometimes we speak as if time is some ineffably mysterious thing. In Saint Augustine’s famous formulation, “If no one asks me, I know what time is. If I wish to explain it to he who asks, I do not know.” But there’s no mystery involved in how we use the concept of time in ordinary practice. If someone tells you, “Let’s meet at eight o’clock,” or “this podcast episode is ninety minutes long,” we know exactly what they mean. The universe—space, and all the stuff within it—happens, over and over again, with slight changes, in a sequence of moments. Time is a label on those moments and a way of measuring the duration of some set of moments.

But if time itself is less mysterious than we might sometimes pretend, it certainly has mysterious aspects. How are time and space similar, and how are they different? Why is the past different from the future? Is the future fixed, or not yet determined? These are all excellent questions, to which we can provide answers at different levels of confidence.

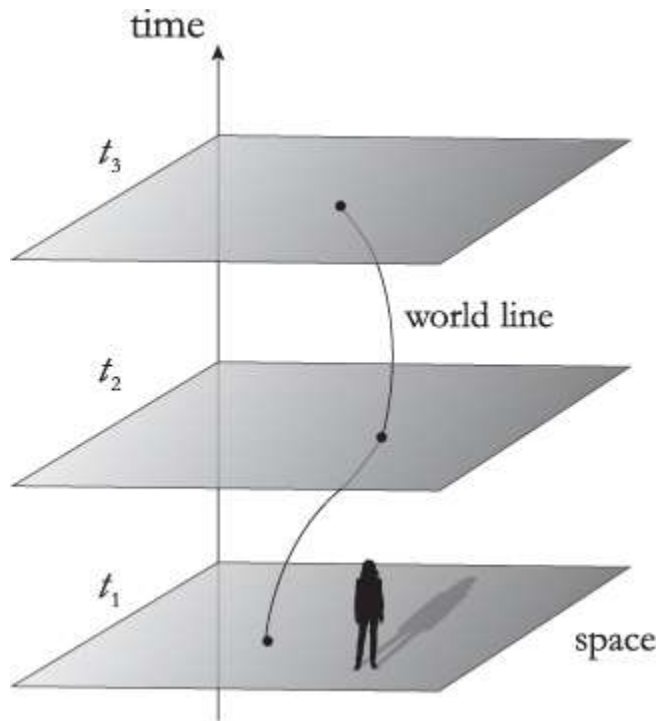
TIME AND SPACE

Time is tricky because in some ways it's like space, and in other ways it's not. Let's ground ourselves by first considering the ways in which time is like space.

Time is part of how we locate ourselves in the universe. If you want to meet someone for coffee, you must specify both *where* and *when*. We could encode that information in four numbers: three to pick out a location in three-dimensional space, and one to specify a single moment of time. In practice we often leave some of that information implicit—we'll say "the coffeeshop downtown," assuming our friend knows both the address and the height above ground—but in principle it's there. If we told someone where to meet but not when, or vice versa, it wouldn't be of much use.

Once we think of time along with space as ways of locating ourselves in the universe, it's natural to group them together in a bundle we call "spacetime." You may have heard that the concept of space-time was invented in the early twentieth century as part of the theory of relativity. That's true as a matter of historical fact. But even in Newtonian physics, before relativity came along, you *could* have lumped space and time together as "spacetime." The difference is just that the division of spacetime into "space" and "time" is completely fixed within Newtonian physics—there's a unique, right way to do it—whereas in relativity different observers will generally divide space-time into space and time in different ways. In Newtonian physics, time and space are each absolute in their own right, while in relativity they are, you know, relative. (In particular, they are relative to our choice of a reference frame in spacetime.)

Even though Newtonian physics doesn't force us to lump space and time together, we're still welcome to do so. Once we do, it makes sense to draw a map—a simplified representation of the universe that includes both spatial dimensions and the single dimension of time. Such **spacetime diagrams** are a crucial part of the conceptual tool kit of the modern physicist. Generally, they are drawn with space stretching horizontally and time vertically, with the past toward the bottom and time increasing as we move upward.*



In a spacetime diagram, an object will not be represented by a single dot signifying its position but by a **world line** stretching from the past to the future, signifying its various positions at different moments in time. Your body takes up a three-dimensional volume in space at any one moment, but your life's history describes a four-dimensional worm extending through spacetime. Every physicist has, at one time or another, visualized their own world line from the moment of their birth to the current time.

LENGTH AND DURATION

The other obvious similarity between time and space is that you can measure them. Paths through space have a measurable length, and intervals of time have a measurable duration.

In practice, we can measure things when we have reliable standards against which to compare them. In the case of length, we have rulers. Take two solid rods of the same length, then let some time pass while protecting them against damage. Maybe one rod stays locked in a cabinet and another one goes on a trip for a while. When the second rod returns, we compare them again and find that they are still the same length. It's the reliability and

reproducibility of this comparison that gives us a useful standard of length. We can pick one rod, call it the “standard meter,” and then measure all other lengths with respect to it. Ultimately the existence of such marvelous artifacts can be traced to the underlying laws of physics. Rods are made of atoms, and atoms have basically fixed sizes, set by physical constants such as the masses and charges of electrons and atomic nuclei. Don’t let anyone accidentally (or maliciously) scrape off any atoms from your standard meter, and you’re set.

Duration is the same story, except we measure it with clocks rather than rods. A clock can be thought of as something that changes over time in a way that is reliable and reproducible in comparison to other clocks. This might seem circular, since we’re using the notion of a clock to define itself. But that’s no different from measuring rods: They are useful to the extent that they stay the same length relative to each other.

The point is that the real universe is full of clocks: systems that carry out some motion in predictable, regular ways with respect to one another. That’s a feature of the laws of physics that allows us to measure the passage of time. (It’s fun to try to imagine what things would be like if there were no clocklike objects in the universe.)

A classic example is the rotation of the Earth and its revolution around the sun. We can be fairly confident that over the course of one year, the Earth will rotate around its axis a bit more than 366 times.* It’s this reliability that makes for good clocks.

Another example is the simple harmonic oscillator. If an oscillator is truly harmonic—the restoring force is precisely proportional to its displacement from equilibrium—it will take exactly the same amount of time to undergo a full oscillation, no matter what the amplitude of that oscillation is. The oscillator moves faster when it’s oscillating by a lot, and slower when it’s just a little, so that the period is the same either way. This makes harmonic oscillators an excellent starting point for building clocks.

Exact harmonic oscillators are hard to come by in nature. There is often some small effect that nudges a real physical system away from being exactly harmonic. But fortunately, we’ve already seen that oscillating systems tend to be *approximately* harmonic when their oscillations are sufficiently small. There is a famous story about Galileo, related by his first biographer, according to which he noticed that a lamp hanging in the

cathedral in Pisa would swing with a fixed period. This gave him the idea that a pendulum could serve as the basis for an accurate clock. Later in life (in fact, after he had gone blind), Galileo returned to this idea, and with the help of his son he proposed how such a clock might work. They didn't get to complete the project, but soon thereafter Christiaan Huygens developed the first practical design.

A pendulum, however, is not a perfect harmonic oscillator; when its swings are too large, they don't have quite the same period as when they are small. To ensure accuracy, you really want to base your clock on a pendulum that swings only a little bit, so you can take advantage of the fact that all oscillators behave harmonically at small amplitudes. Robert Hooke ultimately invented a gizmo called the anchor escapement, which allowed for the construction of practical pendulum clocks that oscillated just a few degrees at a time.

EVOLUTION THROUGH TIME

That's the easy part; the ways that time is like space. But it's not exactly like space. At a visceral level, time seems to *happen* in a way that doesn't quite apply to space. We feel like time flows, or that it passes us by. We're not tempted to describe space as flowing around us, or us through it. To our untutored intuition, at least, space seems like a collection of things (points, one at each location), whereas time seems like some kind of process.

Like many intuitive beliefs, this feeling that time and space are quite different things doesn't come from nowhere. In time, for example, conditions at one moment evolve smoothly into those at the next. Think of Newton's second law, equating force to mass times acceleration (which in turn is the second derivative of position):

$$\vec{F} = m\vec{a} = m \frac{d^2 \vec{x}}{dt^2}. \quad (5.1)$$

Or, just as well, consider Hamilton's equations for the time derivative of position and momentum:

$$\frac{dp}{dt} = -\frac{\partial H}{\partial x}, \quad \frac{dx}{dt} = \frac{\partial H}{\partial p}.$$

(5.2)

In either case, these relations are meant to hold at each moment in time. They determine what happens at other times.

Nothing like that works for space. If you find a heavy rock—too heavy to move with any feasible means at your disposal—chances are very good that the rock will still be there a moment later in time. But if you find a heavy rock at some particular location, there's no rule saying there needs to be another rock (or more of the same rock) at a nearby location in space. As we consider different positions in space, conditions can change quite dramatically from point to point. But as we consider moments in time, one condition flows directly into another.

THE ARROW OF TIME

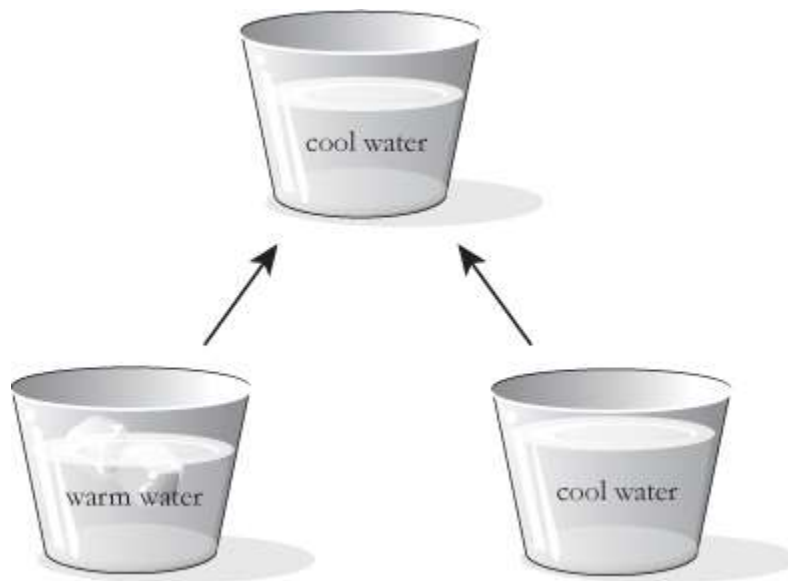
The apparent “flow” of time seems—again, at an intuitive level—to have a pronounced directionality to it. Time seems to move from the past to the future, not the other way around. This feature is the famous **arrow of time**, so named by British astrophysicist Arthur Eddington in 1927.

The arrow of time is fundamentally an asymmetry: From the point of view of “now,” the past and future have quite different properties. The past is fixed, it's in the books, while the future seems open, up for grabs. We have memories and records of the past: photographs, fossils, history books, artifacts in the present that give us some definite knowledge of what happened at some earlier time. There is nothing like that for the future. We can try to predict it, but we don't have any pictures of it. We like to think that our choices here and now can influence what the future will become, but most of us admit that our choices today don't influence yesterday.

The arrow is such an indelible part of how we think time works that early thinkers wouldn't even have thought of it as something that required explanation. *Of course* the past and future are different; how could they be otherwise? They are fundamentally different things.

The advent of classical mechanics turned the arrow of time into a bit of a mystery. It's there that we learn that information is conserved. From the present state of an isolated system, we can predict its future and equally well retrodict its past. This feature is known as **reversibility**: If the laws of physics imply that a system in state A at time 1 evolves to be in state B at time 2, those same laws imply that if the system were in state B at time 2, it must have been in state A at time 1. We can run the clock either forward or backward equally well.

Reversibility isn't manifest in our everyday experience. A glass of warm water with ice in it will, given a bit of time, evolve to a glass of room-temperature water. But a glass of initially room-temperature water will also evolve to a glass of room-temperature water (that is, it won't really change at all). Therefore, if you see a glass of water at room temperature, you don't know whether it used to be warm water with ice or whether it's been at room temperature all along.



So classical mechanics implies secret reversibility: The underlying laws of physics are reversible even if our experience of the world around us is certainly not. We sometimes say that the “microscopic” or “fundamental” dynamics are reversible, but the “macroscopic” or “emergent” dynamics aren't. Here “microscopic” usually means “a small number of moving

parts,” rather than “small in size.” Planets in the solar system are very well described by reversible Newtonian mechanics, even though they’re pretty big. The question becomes why the macroscopic world seems irreversible at all.

TIME REVERSAL

Before digging into the origin of irreversibility, we should examine the similar-sounding (but ultimately different) notion of **time-reversal** symmetry. It’s potentially confusing, but worth getting straight since you will hear people talking about it and pretending it has some connection to the arrow of time (it doesn’t, not really).

A **symmetry** is a transformation that switches around some of the variables of the system but leaves the essential story intact. The time-reversal transformation T involves taking the time variable t and multiplying it by -1 to reverse its direction:

$$t \rightarrow -t. \tag{5.3}$$

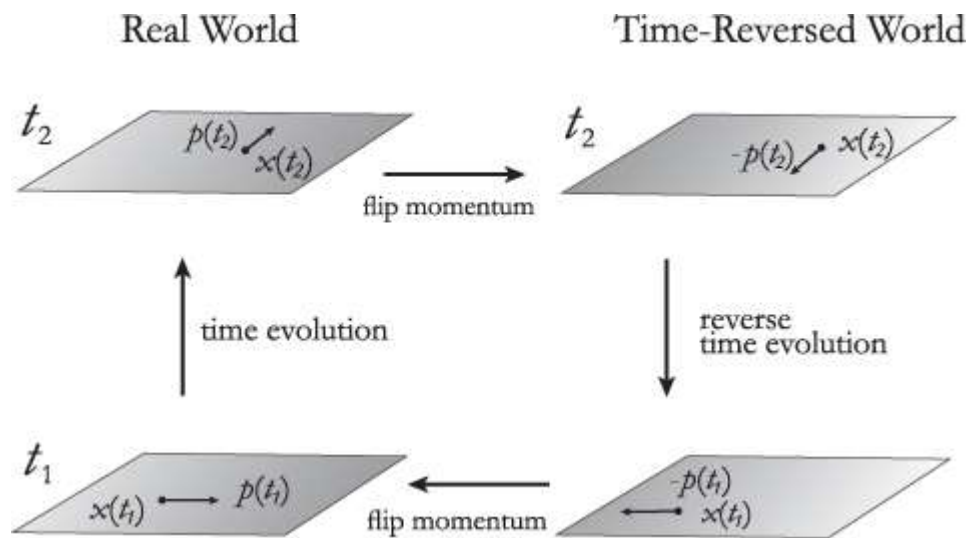
Under this transformation, the laws of classical physics are **invariant**—they remain unchanged. This feature of time-reversal invariance is closely related to reversibility, but it’s not quite the same thing.

Think about Newton’s second law, as written in (5.1). The mass of the object doesn’t change under time reversal. Nor does the force, at least for well-known examples like the force due to gravity or the slope of a hill. What about the acceleration, $\vec{a}$? The position $\vec{x}$ doesn’t change. The infinitesimal time interval dt does; since $t \rightarrow -t$, we also have $dt \rightarrow -dt$. (If you reverse the direction of time, you reverse the direction in which time increments.) But the acceleration involves the square of that, $\vec{a} = d\vec{v} / dt = d^2\vec{x} / dt^2$, and we have $(dt)^2 \rightarrow (-dt)^2 = (dt)^2$. So the acceleration remains unaltered by the transformation (5.3). Hence, the entirety of Newton’s second law is invariant under time reversal.

The same thing holds for the Hamiltonian version of classical mechanics, but in a slightly more fun way. There are two tricks you need to

keep in mind. First, when you do time reversal you should send momentum to minus itself, $\vec{p} \rightarrow -\vec{p}$. You might think this goes without saying, since momentum is mass times velocity, and velocities reverse when we run time backward. But momentum isn't defined by mass times velocity in the Hamiltonian picture; it's an independent variable that happens to equal mass times velocity on trajectories that solve the equations of motion. Nevertheless, you should reverse its sign if you want time-reversal symmetry to be obeyed. (This is a clue that something subtle is going on with this whole business.)

The second trick to keep in mind is that the Hamiltonian is kinetic energy plus potential energy, and kinetic energy usually looks like $\vec{p}^2/2m$. Because the momentum is squared, the kinetic energy itself remains invariant when we reverse the sign of the momentum.



The fundamental equations of classical mechanics, in other words, don't know the difference between moving toward the past and moving toward the future.

REVERSIBILITY AND CPT

“Reversibility” and “time-reversal invariance” are two ideas that sound alike, but there's a subtle difference. Reversibility says that information is

conserved over time, so that systems don't forget what state they started in; time-reversal invariance says that the laws of physics look the same running forward or backward in time. Reversibility, it turns out, is more fundamental: As long as the dynamics are reversible, we can always cook up some notion of time-reversal symmetry.

We can approach this issue by way of a detour. If you hang out with the wrong crowds—in this case, with particle physicists—you might be told that in the world of elementary particles, time reversal is not a symmetry of fundamental physics after all. We've even done experiments that demonstrate the violation of time-reversal invariance. Under precisely the right circumstances you can take a collection of particles in some state A , evolve them through time to some different state B , then reverse all the momenta to run them “backward in time,” and they do *not* end up precisely in state A as we might have expected.

That's not the only symmetry you might have expected to find in nature, but which is actually violated. In addition to time reversal, we also have space reversal, more often known as **parity**, and denoted P . A parity transformation reverses all three dimensions of space at once; it's equivalent to looking at a system in a mirror, so that writing appears backward and right-handed screws look like left-handed screws. Elementary particles often have spin, and a parity transformation would reverse the direction in which they are spinning. Parity was originally believed to be a good symmetry of nature, but in experiments in the 1950s C. S. Wu and others showed that it is violated.

Then there is a symmetry called **charge conjugation**, or C . Many species of elementary particles have associated kinds of **antiparticles**. The antiparticle of an electron gets its own name, the positron, but for the most part we just stick on the prefix anti-, so that the antiparticle of a neutrino is an antineutrino. Charge conjugation exchanges particles for their antiparticles. Like T and P , it turns out to be violated by certain particle interactions. Charge conjugation might seem like a different beast from time or space reversal, but the direction of time is intimately connected with the distinction between matter and antimatter—there is a sense in which antiparticles are mathematically equivalent to particles traveling backward in time.

Here's the punch line: Individually, C , P , and T are all violated in elementary-particle physics. But the combination of transformations, CPT , is conserved. There are good theoretical reasons for this to be true, and thus far it's been experimentally confirmed. If we take an arrangement of particles in state A and evolve them forward in time to state B , we can construct the mirror image of B , switch particles with antiparticles, reverse all the momenta, then evolve backward in time, and once again take the mirror image. The result will be our original state A . That's CPT symmetry in action.

This suggests the following bold strategy: Maybe we could just *define* "time reversal" to be what we've just called CPT ? In other words, could we define a new operation, call it T' , by first doing a naïve time reversal (T), then a parity transformation (P), then a charge conjugation (C), and think of that new operation $T' = CPT$ as "what we really mean by time reversal"? This new souped-up version of time reversal would then be a symmetry of nature after all.

Sure, we can do that. In fact, it turns out that we can always define a time-reversal operator by changing the direction of time plus appropriate alterations to other variables, so that the result is a good symmetry—if the underlying theory is reversible. Reversibility implies some notion of time-reversal symmetry, even if it might not look precisely like the naïve one we originally guessed.

Recall that even in conventional Hamiltonian mechanics we had to reverse the direction of momentum to implement time reversal, but we didn't really offer a principled justification for taking that step. Now we know why: Defining time reversal so that it's a good symmetry of the dynamics will generally involve some extra manipulations, in addition to just sending $t \rightarrow -t$. Sometimes those extra steps seem natural and even inevitable, like sending $\vec{p} \rightarrow -\vec{p}$, so we just bundle them up with the definition of "time reversal" and think no more about it. Other times they might seem ad hoc, like throwing in parity and charge conjugation, so we mumble something about "time reversal being violated, but this closely related symmetry is still preserved." The physical point, independent of our definitional choices, is that some such symmetry is there whenever dynamics are reversible.

So the breakdown of naïve time-reversal invariance T has nothing to do with the arrow of time. That feature of particle physics, while important in its own right, leaves reversibility intact. The arrow of time stems from the fact that the macroscopic world does not appear reversible, even though the microscopic world seemingly is.

ENTROPY

What, then, is responsible for irreversibility, and thus for time's arrow? The ultimate answer lies in the fact that the **entropy** of a closed system, including the universe as a whole, tends to increase over time. Entropy is often roughly defined as the disorderliness or disorganization of a system—a deck of cards in perfect order has low entropy, while a randomly shuffled deck has high entropy. That's good enough for most purposes, but we can be a little more precise.

To Laplace's Demon, who keeps track of the exact microscopic state of the world, everything would seem reversible. Then again, the Demon also knows the complete past and future. The Demon draws no distinction between “remembering the past” and “predicting the future.” For the Demon, there's no real arrow of time.

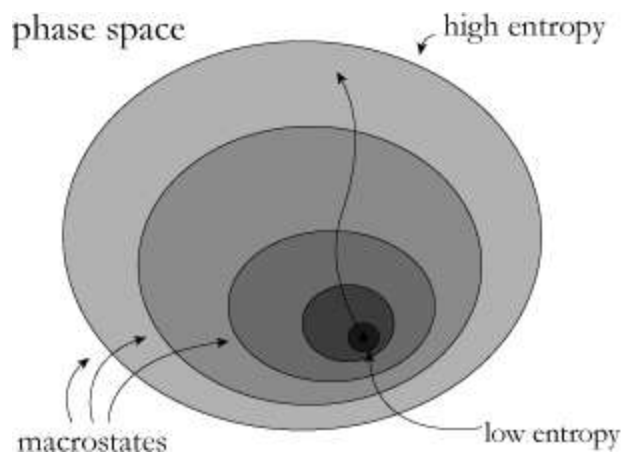
But none of us is Laplace's Demon. We're nowhere close to being Laplace's Demon. We are finite human creatures, with dramatically limited capacities of observation and calculation. We have trouble remembering a phone number, much less the positions and momenta of 6×10^{23} or more particles.* We don't know everything about the exact state of the world, and we don't even see the exact state of the world when we look at it. When we glance around a room, we see tables and chairs and people; we don't precisely measure the position and momentum of each elementary particle of which they are made.

What we do, instead, is what we call **coarse-graining**: We group a bunch of specific states of a system into a single description, then use that description to understand what's going on and make the best predictions we can. When we describe a box of gas or a cup of coffee, we can specify the temperature and pressure and velocity of the fluid at each point in the container—the **macrostate** of the system—but there will still be many

specific arrangements of atoms and molecules—**microstates**— fitting that description. But we don't need to know the exact microstate to know that gas will expand to fill a box, or that hot coffee will cool down to room temperature over time. We can do pretty well making predictions on the basis of just knowing what macrostate we have.

Giving a precise definition to macrostates is a subtle business, but the basic idea is “the set of all microstates that look the same to a macroscopic observer.” Some macrostates, like when a collection of gas molecules is distributed uniformly through a box, correspond to a large number of possible microstates. Meanwhile, other macrostates, like when the gas molecules just happen to all congregate in one corner of the box, correspond to a relatively small number of possible microstates.

It was the brilliant idea of Austrian physicist Ludwig Boltzmann in the 1870s to use this setup to suggest a way of understanding entropy. The idea of entropy had already been introduced earlier in the nineteenth century; Boltzmann's contribution was to connect this intrinsically macroscopic property to its microscopic underpinnings. Namely, he suggested that the entropy is related to the number of microstates in each macrostate.* From this perspective, it makes sense that entropy tends to increase over time. A low-entropy macrostate corresponds to just a small number of possible microstates, whereas a high-entropy macrostate corresponds to a large number of possible microstates. If we start in a low-entropy state and our system wanders off in some generic direction in phase space, we should expect entropy to increase simply because there are more ways (usually many, many more ways) to be high-entropy than to be low-entropy.



This is the **second law of thermodynamics**—in closed systems, entropy will either increase or stay constant, never spontaneously decrease. (The first law is just energy conservation.) Many systems are not closed, in that they interact with the external world. In that case, entropy can certainly decrease; when you put a bottle of Champagne in the refrigerator, it cools off and its entropy goes down. But you'll notice that the refrigerator is expelling heat from the back. Entropy as a whole is still increasing. That's why you can't cool off a room by plugging in a refrigerator and leaving its door open. The laws of thermodynamics won't let you.

Boltzmann's insight provides a connection between the micro-world of particles and Laplace's Demon, and the macroworld of coarse-graining, approximation, and incomplete information. The fact that we can say anything useful at all about physical systems while remaining ignorant of so many details about their microscopic states is a feature of **emergence**. We'll put aside for now the important question of why the world admits higher-level emergent descriptions, but it's one to keep in the back of our minds.

THE PAST HYPOTHESIS

Entropy tends to increase because there are more ways (microstates) to be high-entropy than to be low-entropy. You may have noticed that this explanation smuggles in a hidden assumption: that the entropy started low in the first place. This idea, known simply as the **past hypothesis**, works together with Boltzmann's micro/macro connection to get the second law of thermodynamics off the ground.

We can find some clarity by once again comparing time with space. While there is clearly an arrow of time, there is no such thing as the "arrow of space." You can tell the difference between "up" and "down," but that's only because we live in the vicinity of an influential object—the Earth—and feel its gravitational pull. If you were an astronaut floating in a space suit, there would be no noticeable difference between up and down, left and right, forward and back.

But wait a minute. We *are* here on Earth, and there *is* an arrow that distinguishes up from down. It's just not built into the laws of physics; it's an accident of our local environment. It's due to the particular configuration

of matter in our vicinity—a big, influential planet. Could the same thing be true for time?

It could be, and in fact it is. Because the underlying laws of physics are reversible, if all we knew was that the current entropy of the universe were low, we would predict that it would be higher in the future—but we’d also predict that it had been higher in the past. We would be living at some special historical moment when entropy just happens to be anomalously low.

Nobody believes that’s true. The fundamental symmetry between past and future is broken by a boundary condition on the history of our universe, or at least our observable part of it. That boundary condition sets the initial entropy to be very low indeed.

Our universe is expanding, and about 14 billion years ago, everything we currently see was squeezed into a very hot, very dense, rapidly expanding state. If we extrapolate all the way back, our best current theory (Einstein’s general relativity) predicts a “singularity” of infinite density, labeled “the Big Bang.” The right way to think about that is not that there really was such a singularity but that the theory itself breaks down. Someday we’ll have a better understanding of gravity and the expanding universe, which will hopefully reveal what happened at the moment we call the Big Bang.

For right now, we can content ourselves with describing what happened just after that moment, about which both theory and observation have told us a lot. The universe consisted of a hot, dense plasma, distributed uniformly throughout space.

That might sound like a high-entropy configuration; in a box of gas in a lab here on Earth, the highest-entropy configuration is one where the gas is distributed uniformly. But there is a crucial difference when we’re talking about the universe as a whole, which is so big and massive that gravity becomes crucial. Gravity works to disturb that smoothness, pulling matter into dense regions and emptying out less-dense ones. That’s precisely what happens over the next few billion years as stars and galaxies and clusters coalesce out of the initial smoothness. And during that whole process, entropy is increasing. When gravity is important, there are more ways for particles to be in a lumpy distribution than in a smooth one. So the initial state of the universe had an enormously smaller entropy than we would

expect if it were (somehow) randomly chosen from all possible configurations.

We don't know why the universe started in a low-entropy configuration. After all, low-entropy configurations are supposed to be special; they correspond to far fewer microstates than high-entropy ones. That's a question for cosmology that we'll put aside for now.

What matters is that our observed universe did start out in a low-entropy state, and entropy has been going up ever since. That's the ultimate origin of the direction of time. Just as there is an arrow of space nearby because we live close to the Earth, there is an arrow of time because we live close (relatively speaking) to the Big Bang.

To be fair, much remains to be explained. The arrow of time manifests itself in many ways: memory, causality, aging, and more. We've been talking about the "thermodynamic" arrow of time, with the idea that it ultimately underlies all these other directional aspects—but we haven't carefully demonstrated that. These issues are still research-level open questions.

PRESENTISM, ETERNALISM, POSSIBILISM

We've painted a picture in which the arrow of time isn't built into the fundamental laws of physics but is an epiphenomenon—a by-product of the fact that the universe started in a condition of low entropy, and that low-entropy states tend to evolve into increasingly higher-entropy ones. The directionality or flow of time isn't part of the fundamental architecture of reality, which makes no distinction between evolution to the past or future, nor between different moments of time.

This would be a good place to note that not everyone agrees. The story we've told is probably the closest thing we have to a "standard" view among scientists and philosophers who have thought about these things, but it's not universally accepted. The physics here is pretty well established, but there are alternative philosophical positions to consider (that might someday feed back into an improved understanding of the physics, if they turn out to be right).

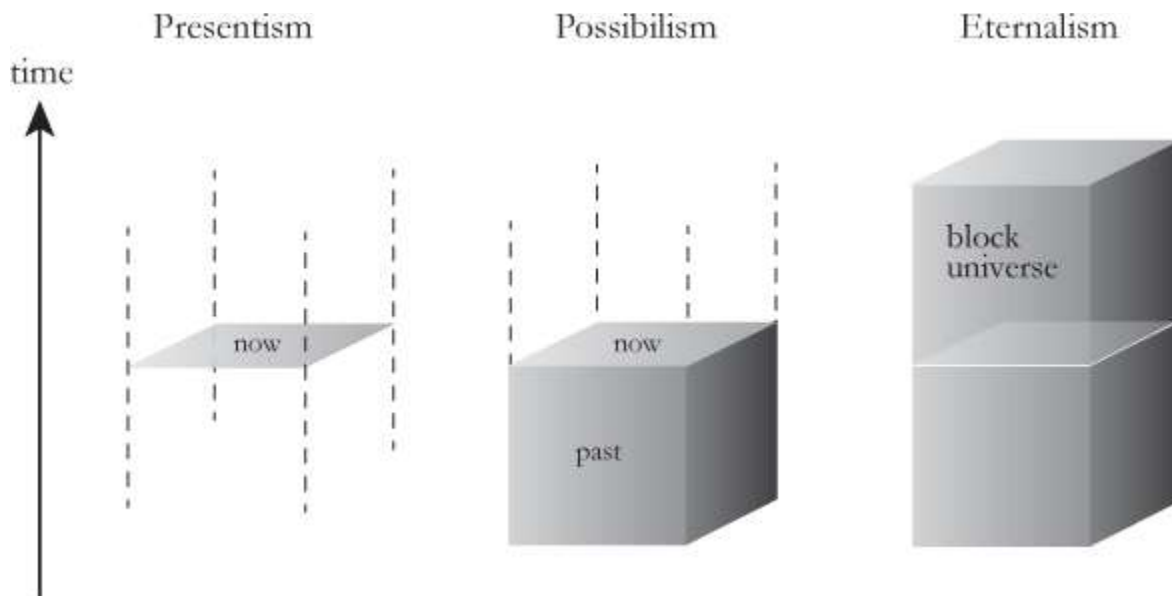
At issue is, once again, what we think of as "real." In our discussion of space, we distinguished between the idea that space is a separate substance

in its own right and whether it's simply a way of organizing relations between objects. But we weren't tempted to think that some locations in space are real while others are not. When it comes to time, that temptation is front and center. Traditionally, in fact, it's been most common to only think of the current moment of time, the "now," as truly real. The past is gone, according to this view, while the future has yet to occur. So they're not real in the same way that the present is.

The view that only the present moment is real is called **presentism**, sensibly enough. It can be contrasted with **eternalism**, the view that all moments of time are equally real, which we implicitly assumed in some of the discussion above. Eternalism is also called the **block universe** view, since it takes the real world to be the whole four-dimensional block of spacetime.

Presentism and eternalism aren't the only options on the table. Those who are tempted by presentism may also be impressed by the difference in how we think about past and future. You can't change the past, after all, whereas we think our actions here and now can have an impact on the as-yet-unformed future. So a third tempting possibility is **possibilism**, or the "growing present" view. There, we count both the past and the present as real while denying that status to the future.

We're not going to offer any final adjudication in the dispute between these perspectives, but we can acknowledge that there are sensible motivations behind each of them. Presentism comes closest to our intuitive, pre-scientific view of the world. Eternalists look at the laws of physics, notice that they are reversible and conserve information, and also that they do not distinguish any special moment as "now." Thus, they say, we should attach equal status to past, present, and future. We can explain our impressions that time flows and that there is something more real about now than about other moments as consequences of the arrow of time, which is itself a consequence of increasing entropy.



To this, presentists will shake their heads, lamenting that their eternalist friends must twist themselves into knots to explain what is right in front of their nose. Wouldn't it be easier, they say, to explain the flow of time by positing that it actually does flow? That only the now is real, and time is how we talk about the process of change, not merely a coordinate on some entirely intangible four-dimensional reality? Indeed, say the possibilists, and as long as we're taking our intuitions seriously, let's not be so blinkered as to put the past and future on an equal footing.

BEING AND BECOMING

These are modern-day descendants of ancient disputes. Presentism is often traced to the Greek philosopher Heraclitus, who emphasized the primacy of change: You can never walk into the same river twice, since at a different time it will be a different river. A more eternalist view can be found a generation later in Parmenides, who conceived of an eternal universe without end. Parmenides, in other words, prioritized **being**, while Heraclitus put the concept of **becoming** at the top of the metaphysical heap.

The being/becoming distinction is reflected not just in the eternalism/presentism dichotomy but in how we think about the laws of nature themselves. According to one school of thought, laws are just convenient ways of summarizing what happens in the world. We could

imagine specifying the universe by listing what happens at every single moment of time, but it's simpler (though still incalculably hard) to specify what happens at just one moment, then say "and other times are related to that one by the laws of nature." This view is dubbed **Humeanism**, after Scottish philosopher David Hume, though it's not clear that Hume himself would have qualified as a Humean in this sense.

The alternative is known as **anti-Humeanism**, presumably because no famous philosopher has championed the view loudly enough to get their name associated with it, although it does have plenty of adherents.* Anti-Humeans think that the laws of nature don't merely describe the world; they act to bring the world into existence, one moment after another. The laws, in other words, don't just go along for the ride; they have an independent existence and are responsible for the universe being the way it is.

Humeanism fits comfortably with an eternalist sensibility, while anti-Humeans are more likely to be presentists. To see how these viewpoints are related, consider **counterfactual** statements—claims about what the world would have been like had it been a bit different. ("I would have skipped the appetizer had I known the dessert selection was going to be this irresistible.") Counterfactuals can be thought of as statements about other **possible worlds**—sensible versions of reality that just happen to not be the reality in which we find ourselves. We deploy them all the time; without thinking about other possible worlds, we couldn't talk about choice, responsibility, morality, or other ideas to which we are generally quite attached.

But wait a minute. To the Humean, all that exists is the actual universe. What we call the "laws of nature" are just helpful summaries of patterns we see within *this* universe. So how can a Humean ever talk about counterfactuals? Or at least, how could they consistently imagine a *different* universe, but with the *same* laws of physics? Humeans think that laws simply describe the world, they don't govern it. Anti-Humeans don't have this worry. To them, laws don't merely summarize what happens, they govern what happens. It's easy to mentally extend that power to possible worlds with other initial conditions but the same laws.

However, anti-Humeans face the challenge of explaining what it *means* to say that the laws of physics "govern" what happens from one moment to the next. If we knew everything that ever happened in the universe, it would

be hard to pinpoint exactly what additional thing we were missing. Humeans often have a sneaking suspicion that anti-Humeans are still operating under an antiquated crypto-Aristotelian view, where parts of the world have essences and natures. Maybe it's okay to think that things just happen, and to take as our task describing what those things are.

* At least, among people who specialize in relativity and spacetime. Computer scientists typically draw time increasing downward, while particle physicists have it go from left to right. Or perhaps from right to left, if they speak a language that is written in that direction.

* Why not 365? Because even if the Earth didn't rotate at all, the sun would still rise and set once per year, because of the Earth's revolution around it. And its motion would be backward from what we see because of rotation. We end up seeing one fewer sunset per year than the number of complete rotations of the Earth.

* The modern laptop computer on which I am writing this has 64 GB of RAM, or enough to store very approximate positions and momenta of about 10^9 particles. You would need approximately a million billion such computers to store the information in a relatively small macroscopic system, even if you devoted all of their memory to the task. It's not going to happen anytime soon.

* Specifically, the entropy of a macrostate is proportional to the logarithm of the number of microstates therein. See Appendix A for a discussion of logarithms.

* According to a recent survey, 31 percent of philosophers take a Humean view of the laws of nature, 54 percent are anti-Humean, and 15 percent reply "other." D. Bourget and D. Chalmers (2021), "Philosophers on Philosophy: The 2020 Phil-Papers Survey," <https://philarchive.org/archive/BOUPOP-3/>.

SIX

SPACETIME

In Newtonian physics, you would have been welcome to consider space and time together as a single four-dimensional **spacetime** in which events are located. But nothing would have forced you to do that; space and time had their independent identities, and nobody ever got them mixed up. It was with the theory of relativity, put together in the early twentieth century, that talking about spacetime became almost unavoidable. In relativity, it's no longer true that space and time have separate, objective meanings. What really exists is spacetime, and our slicing it up into space and time is merely a useful human convention.

One of the major reasons why relativity has a reputation for being difficult to understand is that all of our intuitions train us to think of space and time as separate things. We experience objects as having extent in “space,” and that seems like a pretty objective fact. Ultimately it suffices for us because we generally travel through space at velocities far less than the speed of light, so pre-relativistic physics works pretty well.

But this mismatch between intuition and theory does make the leap to a spacetime perspective somewhat intimidating. To make things worse, presentations of relativity often take a bottom-up approach, starting with our everyday conceptions of space and time and seeing how they become altered in the new context of relativity. We are told stories of stretching rods and distorted clocks, all of which are technically accurate but can obscure the beauty and simplicity of the underlying concepts.

We're going to be a little different. Our route into special relativity might be thought of as top-down, taking the idea of a unified spacetime seriously

from the get-go and seeing what that implies, rather than starting from more familiar-seeming notions and seeing how they become modified in this new context. We'll have to stretch our brains a bit, but the result will be a much deeper understanding of the relativistic perspective on our universe.

THE BIRTH OF SPACETIME

The development of relativity is usually attributed to Albert Einstein, but he provided the capstone for a theoretical edifice that had been building since James Clerk Maxwell unified electricity and magnetism into a single theory of **electromagnetism** in the 1860s. Maxwell's theory explained what light is—an oscillating wave in the electromagnetic fields—and seemed to give a special place to the speed at which light travels. The idea of a field existing all by itself wasn't completely intuitive to scientists at the time, and it was natural to investigate the question of what was actually “waving” in a light wave.

Various physicists investigated the possibility that light propagated through a medium they dubbed the “luminiferous aether.” But nobody could find evidence for any such aether, so they were forced to invent increasingly complicated reasons why this substance should be undetectable. Einstein's contribution in 1905 was to point out that the aether had become completely unnecessary, and we could better understand the laws of physics without it. All we had to do was to accept a completely new conception of space and time. (Okay, that's a lot, but it turned out to be totally worth it.)

Einstein's theory came to be known as the special theory of relativity, or simply **special relativity**. His foundational paper was titled “On the Electrodynamics of Moving Bodies,” in which he argued for new ways of thinking about length and duration. He explained the special role of the speed of light by positing that there is an absolute speed limit in the universe—a speed at which light just happens to travel when moving through empty space—and that everyone would measure that speed to be the same, no matter how they were moving themselves. To make that work out, he had to alter our conventional notions of time and space accordingly.

But he didn't go quite so far as to advocate joining space and time into a single unified spacetime. That step was left to his former university

professor, Hermann Minkowski, in 1907. The arena of special relativity is today known as **Minkowski spacetime**.

Once you have the idea of thinking of spacetime as a unified four-dimensional continuum, you can start asking questions about its shape. Is spacetime flat or curved, static or dynamic, finite or infinite? Minkowski spacetime is flat, static, and infinite. Einstein worked for a decade to understand how the force of gravity could be incorporated into his theory. His eventual breakthrough was to realize that spacetime could be dynamic and curved, and the effects of that curvature are what you and I experience as “gravity.” The fruits of this inspiration are what we now call **general relativity**.

So special relativity is the theory of a fixed, flat spacetime, without gravity; general relativity is the theory of dynamical spacetime, in which curvature gives rise to gravity. Both count as “classical” theories even though they replace some of the principles of Newtonian mechanics. To physicists, “classical” doesn’t mean “non-relativistic”; it means “non-quantum.” All of the principles of classical physics, including our ability to think of things in terms of Hamiltonian dynamics or the principle of least action, are fully intact in the relativistic context, even if we have a somewhat more sophisticated notion of space and time.

TWO NOTIONS OF TIME

Special relativity is often introduced in terms of “length contraction” and “time dilation.” These are perfectly respectable concepts, but they reflect an old-fashioned tendency to treat space and time as separately fundamental, albeit stretchier than we are used to.

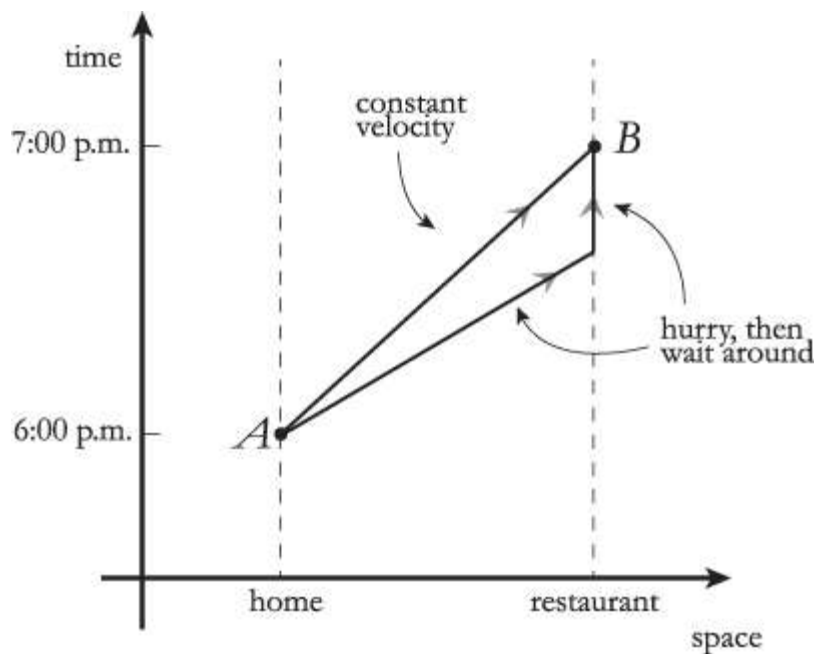
The truth is more profound. We should be willing to let go of our pre-relativity fondness for the separateness of space and time, and allow them to dissolve into the unified arena of spacetime. The best way to get there is to think even more carefully about what we mean by “time.” And the best way to do that is to harken back, once again, to how we think about space.

Consider two locations in space, such as your home and your favorite restaurant. What is the distance between them?

Well, that depends, you immediately think. There is the distance “as the crow flies,” if we could imagine taking a perfectly straight-line path

between the two points. But there is also the distance you would traverse on a real-world journey, where perhaps you are limited to taking public streets and sidewalks, avoiding buildings and other obstacles along the way. The distance you traverse is always going to be longer than the distance as the crow flies, since a straight line is the shortest distance between two points.

Now consider two **events** in spacetime. In the technical jargon of relativity theory, an “event” is just a single point in the universe, specified by locations in both space and time. One event, call it A , might be “at home at 6 p.m.,” and event B might be “at the restaurant at 7 p.m.” Keep these two events fixed in your mind, and think about a journey between A and B . You can’t hurry to get to B sooner; if you arrive at the restaurant at 6:45, you will have to sit around and wait until 7 p.m. to reach the event in spacetime we have labeled B .



Now we can ask ourselves, just as we did for the spatial distance between home and restaurant, how much time elapses between these two events?

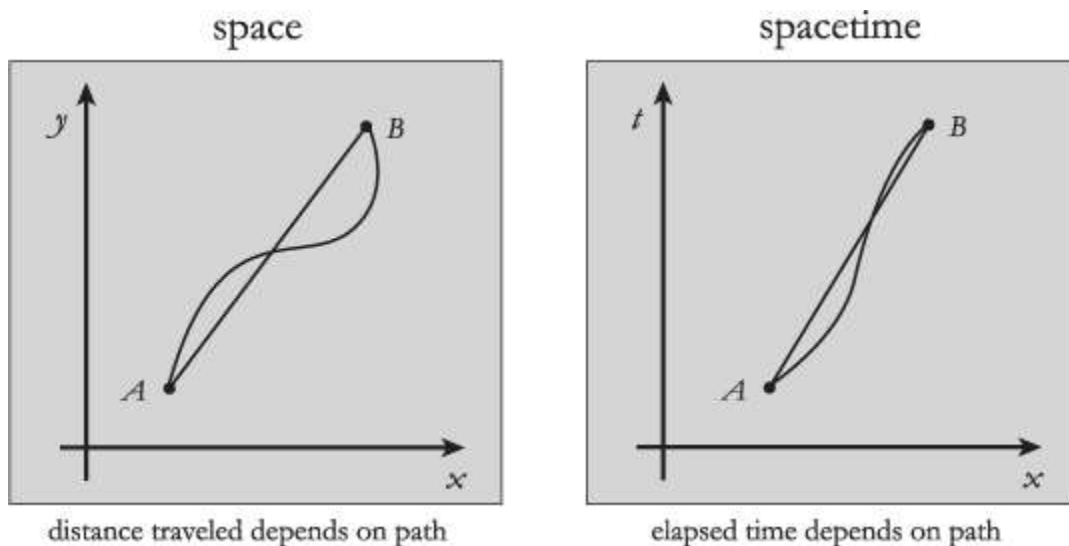
You might think this is a trick question. If one event is at 6 p.m. and the other is at 7 p.m., there is one hour between them, right?

Not so fast, says Einstein. In an antiquated, Newtonian conception of the world, sure. Time is absolute and universal, and if the time between two

events is one hour, that's all there is to be said.

Relativity tells a different story. Now there are two distinct notions of what is meant by “time.” One notion of time is as a **coordinate on spacetime**. Spacetime is a four-dimensional continuum, and if we want to specify locations within it, it's convenient to attach a number called “the time” to every point within it. That's generally what we have in mind when we think of “6 p.m.” and “7 p.m.” Those refer to values of a coordinate on spacetime, labels that help us locate events. Everyone is supposed to understand what we mean when we say “meet at the restaurant at 7 p.m.”

But, says relativity, just as the distance as the crow flies is generally different from the distance you actually travel between two points in space, the duration of time that you experience along your world line generally won't be the same as the universal coordinate time. You experience an amount of time that could be measured by a clock that you carry with you on the journey. This is the **proper time** along the path. And the duration measured by a clock, just like the distance traveled as measured by the odometer on your car, will depend on the path you take.



That's one aspect of what it means to say that “time is relative.” We can think both about a common time in terms of a coordinate on spacetime and about a personal time that we individually experience along our path. And time is like space—those two notions need not coincide. (As historian Peter

Galison has pointed out, it's not a coincidence that Einstein worked in a Swiss patent office at a time when rapid rail travel was forcing Europeans to think about what time it was at other cities across the continent, so that building better clocks became an important technological frontier.)

INERTIAL TRAJECTORIES ARE LONGEST TIMES

There must be some way in which time is not like space, otherwise we'd just talk about four-dimensional space, rather than singling out time as deserving of its own label. And we're not thinking of the arrow of time here—for the moment we're back to a simple world with few moving parts, where entropy and irreversibility aren't things we have to worry about.

The difference is this: In space, a straight line describes the shortest distance between two points. In spacetime, by contrast, a straight path yields the **longest elapsed time** between two events. It's that flip from shortest distance to longest time that distinguishes time from space.

By “straight path” in spacetime we mean both a straight line in space and also a constant velocity of travel. In other words an inertial trajectory, one with no acceleration. Fix two events in spacetime—two locations in space and corresponding moments in time. A traveler could make the journey between them in a straight line at constant velocity (whatever that velocity needs to be to arrive at the right time), or they could zip back and forth in a non-inertial path along the way. The back- and-forth route will always involve *more* spatial distance, but *less* proper time elapsed, than the straight version.

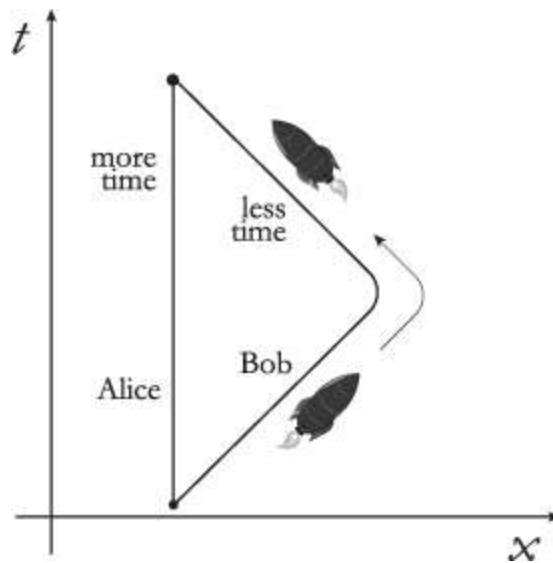
Why is it like that? Because physics says so. Or, if you prefer, because that's the way the universe is. Maybe we will eventually uncover some deeper reason why it had to be that way, but in our current state of knowledge it's one of the bedrock assumptions upon which we build physics, not a conclusion we derive from deeper principles. Straight lines in space are the shortest possible distance; straight paths in spacetime are the longest possible time.

It might seem counterintuitive that paths of greater distance take less proper time. That's okay. If it were intuitive, you wouldn't have needed to be Einstein to come up with the idea.

THE TWIN THOUGHT EXPERIMENT

There is a colorful illustration of this principle, usually known as the **twin paradox**, even though it is absolutely, indisputably not a paradox. It's just a nonintuitive feature of physics that we tend not to come across in our daily lives, largely because we tend to move at velocities much slower than the speed of light. It's bad form to attach words like “paradox” to phenomena that make perfect sense but seem unusual to us when we're first exposed to them.

Consider two twins, Alice and Bob. They don't even have to be twins—people who move on different paths through spacetime will experience different amounts of time regardless of whether they are related—but the scenario is more vivid when they are the same age. Alice stays put here on Earth, while Bob hops into an extremely advanced spaceship, zooms away at a velocity close to the speed of light, then turns around and zooms back to rejoin Alice. We will imagine that the acceleration of Bob's ship is essentially instantaneous, and he is unharmed by the enormous g-forces that would entail. We also ignore details like the fact that the Earth moves (slowly) through space, and that Alice is sitting in a gravitational field. Thought experiments let us invoke these kinds of spherical-cow approximations.



According to this scenario, Alice has moved on a straight line through spacetime by not moving in space at all. Bob's world line takes him from the same initial event to the same final event, but on a highly non-straight path, due to that turnaround at the midpoint. (His path once he departed would have been straight if he hadn't turned around, but in that case he wouldn't have rejoined Alice at a later spacetime event, so there wouldn't be any way for them to compare their ages.)

What the twins find at their reunion is that Bob has experienced less proper time than Alice has. He's not as old as she is, and any clock he brought with him has counted off fewer minutes. Plugging in numbers, if Bob zoomed out and back at a constant velocity relative to Earth of 99 percent the speed of light, for every one year of time that he experienced, Alice will have experienced approximately seven years. (We'll empower you to do this calculation below.) If Bob spent a few years on his journey, he would return to find that his twin sister is considerably older than he is upon his return.

We haven't (yet) sent out any human astronauts on round-trip journeys near the speed of light to test this prediction. But we have done equivalent experiments with elementary particles, and the effect is indisputably real. The amount of time that travelers experience depends on the path they take through spacetime, exactly as the distance traversed through space depends on the path you walk through it.

None of which, as we've noted, is remotely paradoxical. But it is a radical shift in how we think about the nature of time. In Newton's universe, time was universal, and clocks wouldn't go out of sync just because someone took a rapid jaunt through space. In Einstein's universe, time is personal, and your clocks reflect the particularity of your journey.

THE SPEED OF TIME

The twin thought experiment has inspired a great deal of not-very-helpful discussion about the "rate at which time passes." If Bob doesn't age as much as Alice, it sure is tempting to say that Bob's clock was running more slowly. Giving into that temptation leads to all sorts of confusions.

Under certain circumstances—when we're excited, or bored, or quivering with anticipation, or experiencing sheer terror—it can seem like

the rate at which time passes changes. Time can feel like it's speeding up or slowing down, depending on our situation. Rest assured, this feeling is entirely a matter of biology and psychology, not a matter of physics. Your internal clocks, unreliable biological contraptions that they are, have gone out of whack. Time itself cannot speed up or slow down.

After all, what would it mean for time to "speed up"? A speed is the rate at which something happens (the derivative!) *with respect to time*. The velocity at which you are traveling is the rate at which you cover distance as time passes. The rate at which a container fills up is the volume of liquid introduced over time. So the speed of time, if that concept were to make sense at all, would be the rate at which time passes with respect to time. To wit: one second per second. It literally cannot be anything else. It's not a quantity that makes any more sense to worry about than the number of meters you travel per meter traveled.

You will sometimes hear that time can speed up or slow down according to the theory of relativity. That's baloney. Or to be more polite about it, it's a misleading way to describe a real phenomenon.

The new feature in relativity is that the total duration experienced by two observers moving in different ways will generally not be equal, even if they begin and end at the same events in spacetime. This isn't because the rate of time is changing; it's just because one person moved on a different path, and therefore covered a different amount of spacetime. If one person walks in a straight line between two points, and another walks a crooked path between the same points, the second person travels a different distance, but we don't say that they experienced a different number of meters per meter.

When people talk about time slowing down in relativity, it's generally because they haven't truly, deep in their bones, let go of Newtonian absolute time. They're implicitly relating the time clicking by on Bob's clock to some objective time out there in the universe. But there is no such objective or absolute time; there is only what clocks measure. We are welcome to put a time coordinate on spacetime, but that's far from objective. I might use a different coordinate system than you do, and nothing physical depends on this choice.

While Bob is zooming around in his spaceship, if he ever glances at his watch, it will appear to be ticking at precisely its normal rate, one second per second. After all, both Bob and the watch are moving along the same

trajectory through spacetime, and therefore experiencing the same amount of proper time. If Bob takes his pulse, he will measure the same number of heartbeats per minute that he usually does. (Unless he's excited because he's zooming around in a spaceship, which would be understandable.)

But . . . you might be thinking—and here's the crucial bit—surely Bob's time has slowed down with respect to Alice's time, right? After all, when they reunite he has aged less.

The problem is that in order for us to make sense of the claim that Bob's clock ticks at a different rate from Alice's, we would have to somehow compare them. That's no trouble when the clocks are at the same location, where we can just look at them. But when they are separate, there's no way to “simultaneously” check what time it is on both clocks. If we're close to one clock and the other is far away, it will take time for any signal from the distant clock to reach us; no signal from there to here can move faster than the speed of light. By the time we see what the distant clock reads, more time has passed on the nearby clock.

You might think this is just a technical annoyance we could fix up by bouncing signals back and forth between clocks or some such thing. You are welcome to invent such schemes. But there's no way for the comparison to be absolute or instantaneous. You've just invented something arbitrary, not a natural way of comparing distant clocks to each other.

The right strategy is to give up on the idea of comparing clocks that are far away from each other. That's perfectly okay, and very much in the spirit of relativity. Think locally, and let go of the parochial impulse to extend your local thoughts into absolute structures across the span of space and time.

MINKOWSKI SPACETIME

You've been very patient with all these words. Time to get to some equations.

We've emphasized that the time measured on clocks moving through spacetime is analogous to the distance traveled along a path through space. We can put some quantitative meat on those bones by thinking about how we measure distances.

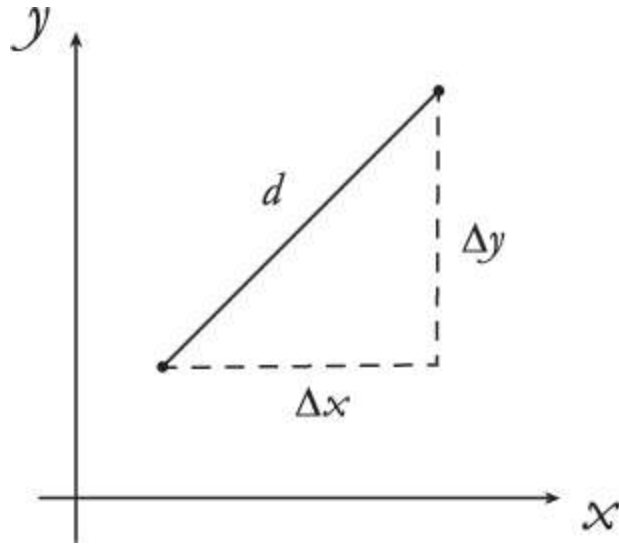
The answer lies in **Pythagoras's theorem**. Consider a right triangle, a triangle where one interior angle is a right angle. The long side, the hypotenuse, will be opposite the right angle. Then Pythagoras tells us that the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides: $a^2 + b^2 = c^2$, if a and b are the short sides and c is the hypotenuse.

That's an intrinsically interesting result, especially for fans of right triangles. Where it becomes crucial for us is when we express space in terms of Cartesian (perpendicular) coordinates. For simplicity let's just consider two-dimensional space and label our coordinates x and y as usual.

For any two points on the plane, there is a well-defined distance d between them. Given our coordinate system, there is a nice way to calculate what that distance is. We can draw a right triangle by starting at one point, traveling in the x -direction (horizontally) until we reach the x -value of the second point, then traveling in the y -direction (vertically) until we reach the second point itself. This defines a right triangle, whose shorter sides have lengths Δx and Δy , and the hypotenuse is the distance we're interested in. (Remember that the Greek letter Δ , Delta, means "the change in.") So by Pythagoras's theorem, the distance can be expressed in terms of the changes in coordinates between the two points as

$$d^2 = (\Delta x)^2 + (\Delta y)^2.$$

(6.1)



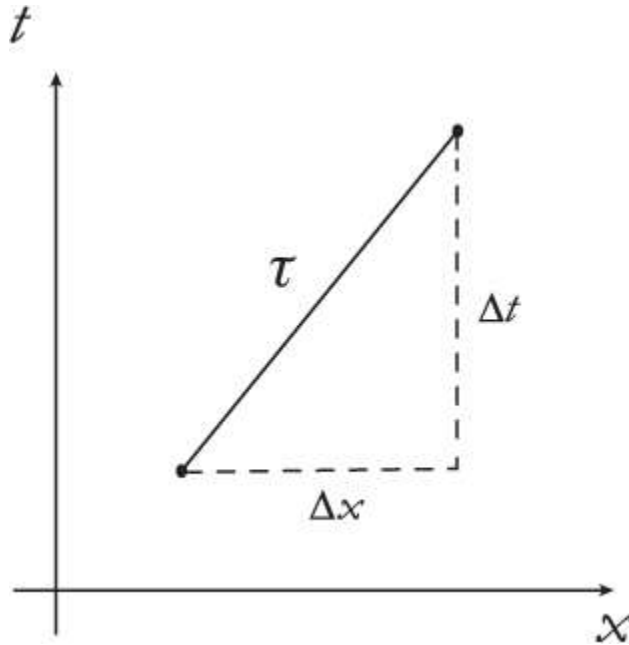
You probably knew all that. The cool part is that almost the same thing works for the time measured along a path in spacetime. “Almost” because there is one crucial modification—in spacetime, a minus sign sneaks into Pythagoras’s theorem. It is this minus sign that is responsible for the switch from “shortest distance” to “longest time” for straight paths.

Consider a simplified two-dimensional spacetime on which we put coordinates x for space and t for time. And imagine we have a straight-line path (constant velocity) traveling between two events. Let τ (the Greek letter tau) be the proper time, what a clock would measure along the path. We can once again define the coordinate differences between the two events, this time Δx for space and Δt for time.

The defining feature of Minkowski spacetime, the arena on which the drama of special relativity plays out, is that the proper time satisfies a Pythagoras-like equation, but with a crucial minus sign in front of the spatial bit:

$$\tau^2 = (\Delta t)^2 - (\Delta x)^2.$$

(6.2)



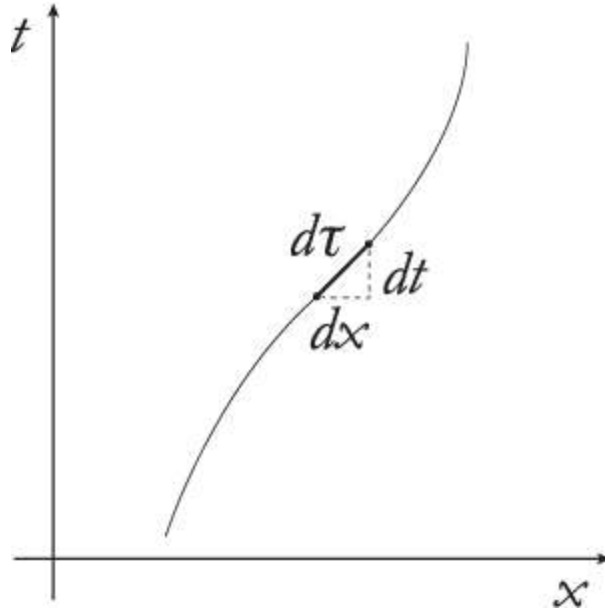
This simple equation tells us a lot about how spacetime works (everything we need to know, really). Think of a **stationary observer**, someone who doesn't move at all in the coordinate system we have set up. They will age forward in time, of course, but they don't move in space. So for a stationary observer we have $\tau^2 = (\Delta t)^2$, or simply $\tau = \Delta t$. The proper time and the coordinate time are the same, which is what most of us are used to anyway.

Observers who move tell a different story. They will have a nonzero Δx . So their proper time will always be *less* than that of a stationary observer, given a fixed amount of coordinate time elapsed, because of that funny minus sign in (6.2). Relativity posits a trade-off between time and space: On a journey between any two fixed events, the more you move in space, the less time you feel passing.

We've been talking about straight-line paths, but there's no trouble whatsoever with incorporating arbitrary journeys into our story. We can guess what the strategy should be: Apply an infinitesimal version of (6.2) to very short segments of a path, then do calculus. For infinitesimal distances in spacetime, the modified Pythagoras formula becomes

$$d\tau^2 = dt^2 - dx^2. \tag{6.3}$$

If we want to calculate the total amount of proper time elapsed along a path, we just integrate to get $\Delta\tau = \int d\tau$.



Sometimes people will suggest that special relativity works only for unaccelerated trajectories, and you need general relativity to handle acceleration. Rubbish. General relativity becomes important when spacetime is curved and we have gravity. As long as spacetime is flat—which it is in Minkowski spacetime, which we’re sticking to in this chapter—special relativity applies, and you can consider any paths you like.

THE SPEED OF LIGHT

Confession time. We cheated a bit in the modified Pythagoras relations, equations (6.2) and (6.3). Remember dimensional analysis: Physical quantities are expressed in units, and we can only add quantities together if they have the same units. But τ^2 and $(\Delta t)^2$ have units of $(\text{time})^2$, while $(\Delta x)^2$ has units of $(\text{distance})^2$. Who do we think we are, just adding them together like that?

The secret is that relativity provides a universal conversion factor between space and time. (They are both directions in spacetime, after all.)

The conversion factor is denoted c and is numerically equal to

$$c = 299,792,458 \text{ meters/second.} \quad (6.4)$$

You might know this quantity as **the speed of light**. But what's important is not that light travels at this speed. What matters is that there is a universal speed, built into the very fabric of spacetime, that we can use to convert between space and time. It just so happens that light waves (as well as gravitational waves, for that matter) travel at this special velocity.

This is such an important property that old-fashioned units like “meters” become cumbersome. It's immensely more convenient to use units like “light-seconds,” the distance that light travels in one second. Namely, one light-second equals 299,792,458 meters. This number is exact, because it is easiest to define one second in terms of certain atomic vibrations, then define the meter to be the distance light travels in $1/299,792,458$ seconds.

It might be exact, but that's an awkward number. If we use light-seconds instead of meters, we can simply write

$$c = 1 \text{ light-second/second.} \quad (6.5)$$

That's just as exact, and much easier to remember. Things work equally well if we use light-years and years, or whatever.

The great thing about using units where $c = 1$ is that you can just leave the speed of light out of your equations entirely, since multiplying and dividing by 1 doesn't do anything. That's what we sneakily did when we wrote down (6.2). On the right-hand side, where we wrote Δx , what we really meant was $\Delta x/c$. Once we've chosen units in which $c = 1$, we can take the speed of light as implicit. That's both notationally cleaner and helps reinforce the deep truth that distances and times are both measures of displacement in spacetime.

Now we can plug in numbers to the twin thought experiment. Consider the segment of Bob's journey from when he first departs to the midpoint when he turns around. (The second segment is a repeat of the first, just with

the direction of travel reversed, so we don't have to do the calculation twice.) We are assuming he is moving at a constant velocity,

$$v = \frac{\Delta x}{\Delta t}.$$

(6.6)

Equivalently, we know that $\Delta x = v\Delta t$. Plugging into (6.2) gets us

$$\begin{aligned}\tau^2 &= (\Delta t)^2 - (\Delta x)^2 \\ &= (\Delta t)^2 - v^2 (\Delta t)^2 \\ &= (1 - v^2) (\Delta t)^2,\end{aligned}$$

(6.7)

or

$$\tau = \sqrt{1 - v^2} \Delta t.$$

(6.8)

Alice and Bob start and end at the same events, traversing the same amount of coordinate time Δt . Alice is stationary, so her proper time is equal to the coordinate time elapsed. But Bob experiences less proper time, by a multiplicative amount $\sqrt{1 - v^2}$ (in units where $c = 1$, remember). If $v=0.99$, we get $\sqrt{1 - v^2} = 0.14$, and $1/0.14$ is approximately 7. That's why Alice ages seven years for every one of Bob's.

This calculation also explains why it took so long to invent relativity. Newton was smart—why did he ever think that you could group everyone's proper time into some absolute time? The answer is that most of us spend our lives moving much more slowly than the speed of light. If you're driving in a car at 65 miles per hour, that's $v = 10^{-7}$ in units where $c = 1$. In such cases, the factor $\sqrt{1 - v^2}$ in (6.8) is approximately 0.9999999999999995.

That's so close to 1 that you'd never tell the difference. In our everyday lives, the proper times we experience are essentially indistinguishable from a single background coordinate time.

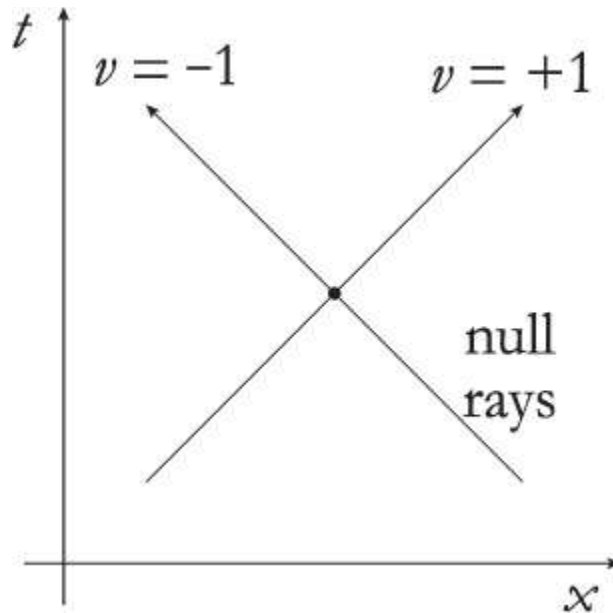
LIGHT CONES

The minus sign in the proper-time formula (6.2) opens up an interesting possibility. If we consider a straight path that traverses equal amounts of space and time, $(\Delta x)^2 = (\Delta t)^2$, we will have $\tau = 0$. So the object moves, but no proper time elapses along its journey. These are just trajectories that move at the speed of light:

$$v = \frac{\Delta x}{\Delta t} = \pm 1. \tag{6.9}$$

(This minus sign just means the object could move to the left rather than to the right, which doesn't matter for our present purposes.)

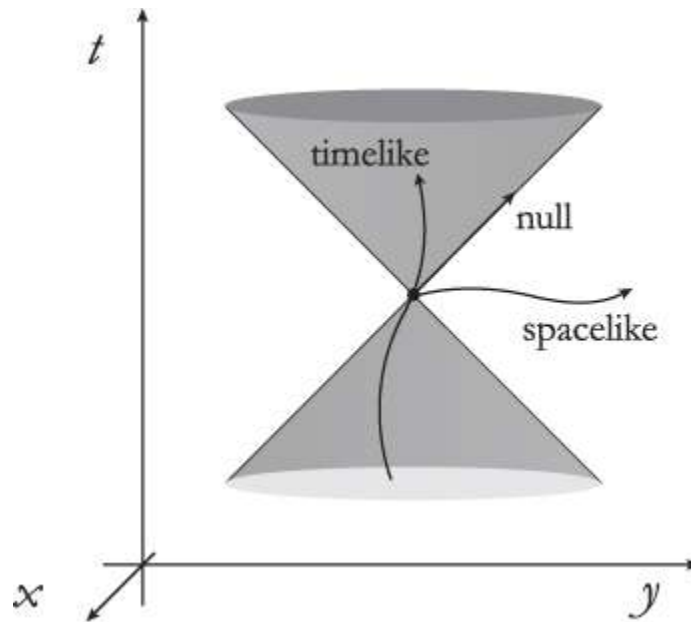
That's a pretty interesting result. Anything that moves at the speed of light, including light itself, doesn't experience the passage of time. It's tempting to ask yourself what it would be like to travel at that speed. (Apparently Einstein wondered about this when he was in high school.) The short answer is that there is nothing "it would be like" to travel at the speed of light; if somehow you could do it, you wouldn't experience the passage of time, so you wouldn't have any perceptions or conscious thoughts at all.



Paths in spacetime that move at the speed of light are called **null** trajectories (because the proper time is zero) or **lightlike** trajectories (for obvious reasons). When we choose units where $c = 1$, null trajectories are drawn as diagonal lines that tilt at 45 degrees on a spacetime diagram, traversing equal amounts of space and time. Anything that is moving slower than the speed of light will traverse more time than space, so such paths are known as **timelike** trajectories, moving upward in the spacetime diagram. We can also consider **spacelike** trajectories, which move sideways and traverse more space than time. No physical objects can travel on spacelike paths (you can't go faster than light), but that doesn't stop us from drawing such paths or thinking about them.

Pick a single event in spacetime and call it A . Imagine drawing all the lightlike rays starting at that event and extending into the future. It's as if a lightbulb flashed on and then immediately off again at that point, and we are tracing the paths of all the photons of light created in that instant. (The spacetime version of poking your finger into still water and watching a ripple travel outward, if that ripple moved at the speed of light.) Together, those paths constitute the **light cone** of event A . Our hypothetical lightbulb doesn't need to actually exist; every event defines a light cone of null rays connected to it, even if no light is traveling on those rays. In fact, there is a

past light cone as well as a future one, consisting of all the lightlike paths pointing directly toward A from the past.

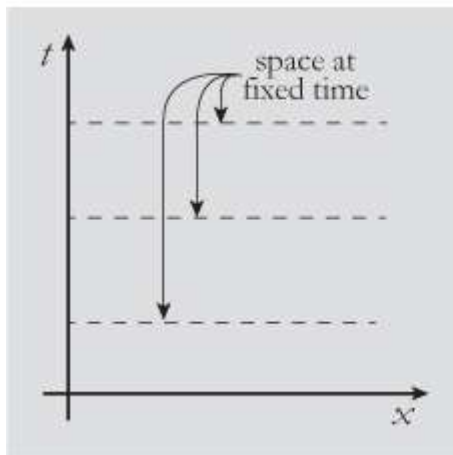


The speed-of-light limit implies that physically allowed trajectories that pass through any event must, as they stretch from past to future, stay inside the light cones of that event. This is true for every event; each point in spacetime defines past and future light cones, and any physical trajectory passing through them must stay inside.

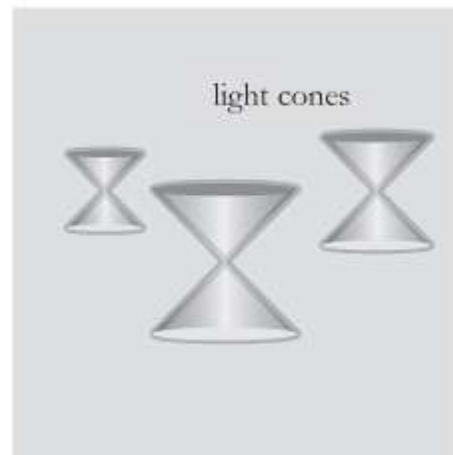
This light-cone structure is what replaces the quaint Newtonian notion of absolute space and time. When we draw a Newtonian spacetime diagram, we slice spacetime into horizontal “moments of time.” Two events that are separated in space but occur at the same time are said to be “simultaneous.”

That’s not the right way to think once we’ve made the transition to relativity. There is no notion of simultaneity between two separated events. There is only whether two events are inside each other’s light cones. If they are, we say the events are “timelike separated,” while if they’re outside, they are “spacelike separated.” Those are well-defined notions that every observer in the universe will agree on, while “simultaneous” is not.

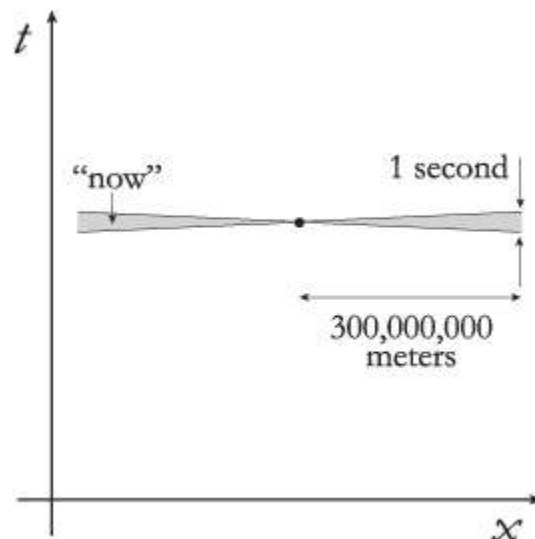
Newtonian spacetime



Minkowski spacetime



Slicing spacetime into horizontal moments seems natural because, once again, we live our lives moving very slowly compared to the speed of light. For everyday purposes, it's much more convenient to use units like "meters" rather than "light-seconds." (In all of human history, only a few Apollo astronauts have ever traveled farther than one light-second from their birthplace on Earth. And it took them much longer than one second to do so.) If we draw a spacetime diagram using meters and seconds, light cones aren't tilted at 45 degrees. Instead, they zip through so many meters in a single second that they look almost horizontal. It's hard to tell the difference between "the set of all spacelike-separated events" and "a single moment of time." But the difference is very real.



Once you become hard-core about relativity, you would be well served to not even draw “slices of space at fixed time” on your spacetime diagrams. You should draw only light cones, which are objective and universal. The urge to slice spacetime into moments of time is almost irresistible. Just don’t think you’re reflecting any true features of reality.

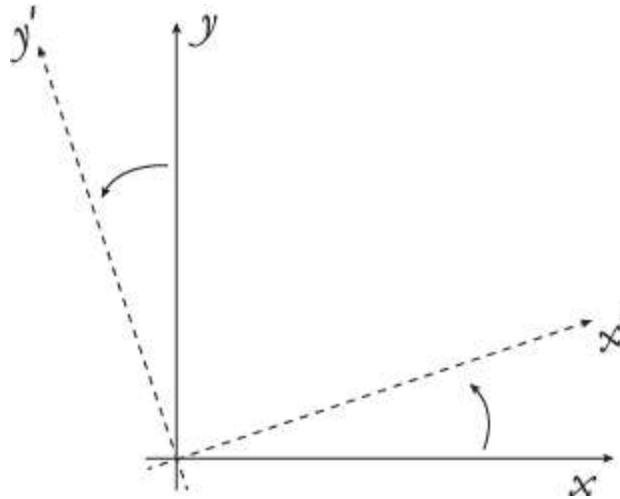
REFERENCE FRAMES

Having said all that, let’s acknowledge that people are going to keep drawing horizontal slices on their spacetime diagrams, even if they’ve been brought up to know better. These slices are called “reference frames,” or “global reference frames” to emphasize that we are extending them throughout all of space. When we make the transition from the flat spacetime of special relativity to the curved spacetime of general relativity, global reference frames go from “unnecessary” to “maybe not even possible.” But thinking about them helps us understand why people talk about ideas like “length contraction,” so it’s worth sorting them out, if only so we can better communicate with our fellow special-relativity enthusiasts.

Let’s start as usual by reminding ourselves how things work in space. In two-dimensional flat space, it’s often convenient to use Cartesian coordinates x and y , which define axes that are perpendicular to each other. But everyone knows that it’s the two-dimensional plane itself that matters, not the particular coordinates we use to locate points within it. We can choose other coordinates x' and y' , for example, by rotating the original ones by some angle. The new coordinates are just as useful as the old ones, and physically measurable quantities like the distance between two points don’t change.

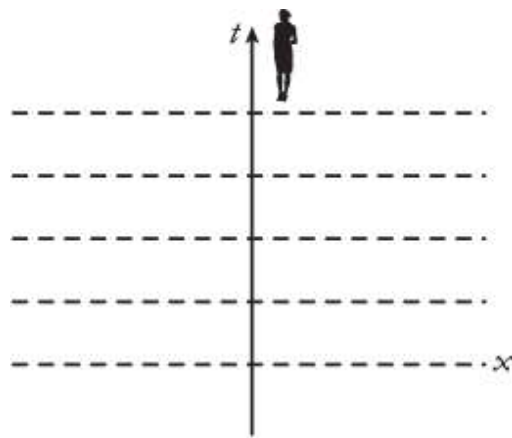
We can do a similar thing in spacetime. Consider a single observer who doesn’t accelerate in any way and use them to set up a coordinate system. They have a clock with them, so we can use the proper time along their trajectory to define a time coordinate t . We also, a bit more creatively, imagine that once every second our observer shoots out “infinitely fast” rays in all directions. We all know nothing can travel infinitely fast, so this is a purely conceptual move. What we really mean is that our observer defines spacelike lines that are “perpendicular” to their world line. Let the distance along these rays be labeled x . In this way we define a coordinate

system—an **inertial reference frame**, since our observer is unaccelerated and hence “inertial”—that extends throughout spacetime.

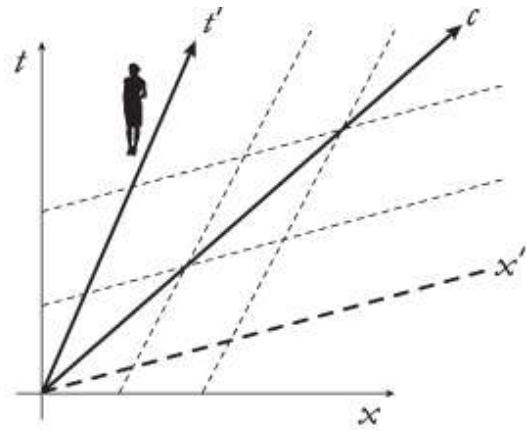


You can probably guess what’s coming next: We do the same thing, but now starting with a different observer, one who is also unaccelerated but who is moving at a constant velocity with respect to the first one. They define a time coordinate t' using their clock, and shoot out imaginary infinite-speed spacelike rays to define a spatial coordinate x' . Basing a new coordinate system on a moving observer is analogous to rotating a Cartesian coordinate system in ordinary space. This change of coordinates is called a **Lorentz transformation**, after Dutch physicist Hendrik Antoon Lorentz.*

But there is a surprise. When we plot the infinite-speed rays emitted by the moving observer on our original spacetime diagram, they don’t *look* perpendicular to the motion of the observer themselves. The new “time axis” and “space axis” (t' , x') look like they are scissoring together rather than remaining at right angles. But they actually are perpendicular to each other; the difference can be traced to that minus sign in the Minkowski distance formula (6.2).



original observer's frame



moving observer's frame

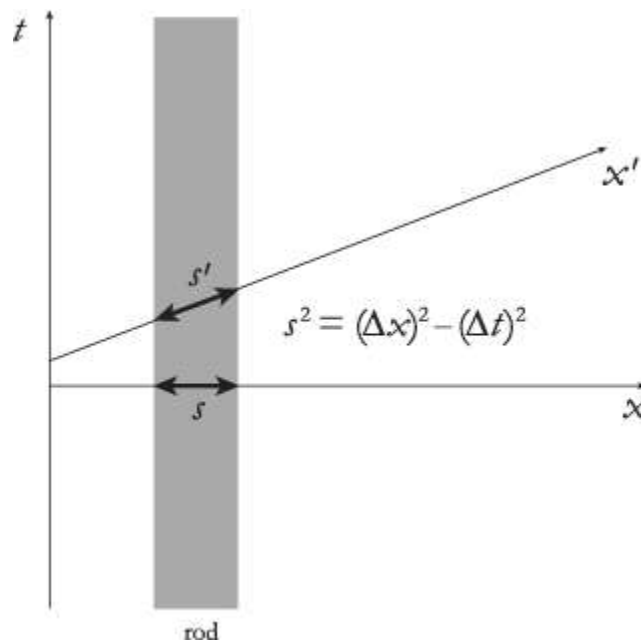
From a physical perspective, this scissoring effect can be thought of as a consequence of the constancy of the speed of light. We notice that the new time and space axes maintain a constant angle with respect to the light cones. This reflects the fact that every observer will measure the speed of light to be equal, whatever reference frame they are using.

This is a good place to mention that the phrase “theory of relativity” is a misnomer. The basic meaning of “relativity” in this context is that there is no objective, preferred reference frame in the universe; we can only measure the velocity of an object relative to the motion of other objects, not in any absolute sense. But that was also true in Newtonian mechanics, which featured Galilean relativity. The “theory of relativity” in the modern sense comes from the combination of this relativity principle and the constancy of the speed of light to all observers. Or, equally well (and more elegantly), it comes from the idea that we live in Minkowski spacetime, where proper time is measured by [\(6.2\)](#).

LENGTH CONTRACTION

The tilting of reference frames helps explain the famous phenomenon of **length contraction**, according to which objects moving at high velocity supposedly get shorter. After all, what is the “length” of something? You might think that a ruler, for example, has a length. But unless your ruler literally exists only for a single moment, it has extent in time as well as in space. If we simplify our lives by abstracting a physical ruler to an object

with just one dimension of spatial extent, it still has a two-dimensional “world volume” in spacetime. When we talk about its length, we need to choose a reference frame to distinguish the spatial part from the temporal part of the ruler’s world volume. The “length of the ruler” is actually the spatial distance of a cross section of that world volume in a particular reference frame. Usually, with good reason, we consider the rest frame of the ruler, the coordinate system in which it’s not moving. Talking about the length of a moving ruler is equivalent to measuring that spatial distance in a different frame.



We can see from the figure that it does indeed look like the spatial cross section of our ruler will be different in a moving reference frame. Unfortunately, it looks to be longer, rather than shorter, in the moving frame. That seems like elongation, not contraction. What’s going on?

The culprit is our intuition about how length works when we draw a map of space, which doesn’t always carry over to spacetime diagrams. The formula (6.2) tells us how to calculate the proper time along a trajectory in terms of time and space coordinate displacements. But “proper time” only makes sense for timelike trajectories. For spacelike trajectories, Δx is greater than Δt , which would mean that τ^2 would be negative, which is not a

good quality for the square of a number to have. (It doesn't make sense to think of an interval in spacetime as an imaginary number.) There is no reason to attach a proper time to a spacelike interval.

What we want to attach to spacelike intervals is, of course, a spatial distance, which in this context is usually denoted s . Happily, there is a version of (6.2) that works well for this purpose: Just reverse the sign. Here is the formula for the length of a spacelike segment:

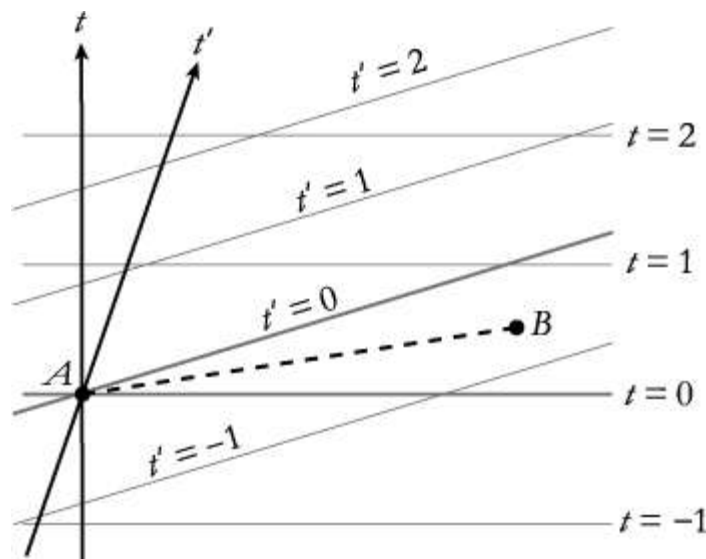
$$s^2 = (\Delta x)^2 - (\Delta t)^2. \tag{6.10}$$

The minus-sign difference between time and space explains why the length of the ruler as measured in the moving frame is actually shorter than in the rest frame, even though it looks longer on the page: because it extends in time as well as in space. In a two-dimensional spatial plane, picking up the end of a horizontal line segment and moving it vertically always makes the segment longer, because of Pythagoras's theorem. But in spacetime, moving one end of a segment a bit in time will make it shorter. Length contraction is real, but it's not that the object is physically shrinking; we're just in a different reference frame, measuring a different quantity.

SIMULTANEITY AND ITS DISCONTENTS

Comparing these two reference frames drives home the harsh reality that there is no such thing as "at the same time" for distant events in relativity. That's pretty obvious from the figure, since the lines defining "simultaneous" aren't the same in the two coordinate systems. But it gets worse.

Take the event where our two observers overlap, the origin of both coordinate systems, and label it A . Then choose another event B , far away from A in space and just a tiny bit in the future as measured in our original time coordinate t .



From the figure we can immediately see that while B might lie to the future of A in the (t, x) coordinate system, it's in the *past* of A in the (t', x') system.

That's just what life is like for spacelike-separated events. There is no such thing as which event is “really” in the past or the future. That depends on what reference frame we use, and all reference frames are equally valid. All that we can say in good conscience is that the two events are spacelike-separated.

It's natural for us to think about what's happening “right now” somewhere else in the world. That kind of thinking will get us into trouble when we start contemplating astronomically large distances. The nearest star to our sun, Proxima Centauri, is approximately four light-years away. For any particular event on Earth, there is an eight-year span of events on Proxima Centauri that could count as “simultaneous” with it, depending on your reference frame.

This feature of special relativity spells trouble for *Star Trek* and other space operas. It's common in such stories to posit the invention of warp drive or some other advanced technology that allows our heroes to travel faster than light. But once you can travel on spacelike trajectories, you can effectively travel backward in time, at least in some reference frame. Indeed, all spacelike trajectories are created equal, according to special relativity. So if you can travel faster than light, you can go backward in time in any reference frame at all.

Maybe that's what you want for your science-fictional universe. (*Star Trek* has certainly been pretty shameless about invoking time travel when it seemed like fun and then ignoring it in subsequent episodes.) But it's hard to keep things logically consistent. It's safer for physics and for fiction to just exclude faster-than-light travel entirely.

UNIFICATION

James Clerk Maxwell's theory of electromagnetism was one of the first great examples of **unification** in physics, bringing together electrical and magnetic phenomena under a single umbrella. (Newtonian gravity was an even earlier case, unifying the falling of apples with the motion of the planets.) Numerous beneficial insights came along for the ride, such as the understanding that light is a form of electromagnetic wave. Special relativity, which was inspired by Maxwell's theory, is another great example, unifying space and time together into spacetime. We shouldn't be surprised that this perspective comes with its own new insights.

In three-dimensional space we often talk about vectors, such as the velocity vector of a moving object. As we know, that's just the derivative with respect to time of the object's position, $\vec{v} = d\vec{x}/dt$. Given some coordinate system in space, it's convenient to express the vector in terms of its components in each direction:

$$v^i = (v^x, v^y, v^z) = (v^1, v^2, v^3). \quad (6.11)$$

Here the superscript i is an **index**—a label on which component we're talking about, not an exponent!—running over the numerical values (1, 2, 3), corresponding to the spatial directions (x, y, z).^{*} Note the flexibility of this notation: We can think of i as standing for either the numerical index of which component we're considering or the literal coordinate variable.

Now that we've progressed from space to spacetime, it's natural to define a generalization of these three-dimensional vectors, which we will imaginatively call **four-vectors**, since spacetime is four-dimensional. The

spacetime version of velocity is the **four-velocity**, which we can think of as the rate at which the object moves through spacetime.

We will first invent some slick new notation that will look intimidating at first but will quickly become second nature. Namely, we will include time among our coordinates on spacetime by promoting the Latin index i , which runs over (1, 2, 3), to a Greek index μ (mu), which will run over (0, 1, 2, 3). That means we are treating time as the “zeroth coordinate,” $t = x^0$. You might think it would be more natural to make time the fourth coordinate, but labeling it as x^0 will make our lives easier if we ever want to contemplate additional (or fewer) dimensions of space. The set of spacetime coordinates is therefore

$$x^\mu = (t, x, y, z) = (x^0, x^1, x^2, x^3). \quad (6.12)$$

The four-velocity of an object is going to be the derivative of its coordinates in spacetime.

But wait a minute. You’ve already been forced to sit through a rant about how it doesn’t make sense to talk about “the speed of time” in the same way we talk about speed through space. So how can we talk about a velocity through spacetime?

The main trick is to define the four-velocity as a derivative with respect to the proper time τ along the trajectory, rather than with respect to the coordinate time t . We write the components of the four-velocity as

$$V^\mu = (V^0, V^1, V^2, V^3) = \frac{dx^\mu}{d\tau} = \left(\frac{dt}{d\tau}, \frac{dx}{d\tau}, \frac{dy}{d\tau}, \frac{dz}{d\tau} \right). \quad (6.13)$$

What does the four-velocity physically represent? From (6.8) we know that

$$d\tau = \sqrt{1 - v^2} dt.$$

(6.14)

(We showed this for straight-line paths, but it's true generally for infinitesimals, with v being the velocity at the point under consideration.) So the components of the four-velocity become

$$V^\mu = \frac{1}{\sqrt{1-v^2}} \left(1, \frac{dx}{dt}, \frac{dy}{dt}, \frac{dz}{dt} \right).$$

(6.15)

When v is very small, the factor $\sqrt{1-v^2}$ is approximately equal to 1 and can be ignored. Then the zeroth component V^0 of the four-velocity is simply 1, and the other components are just equal to the ordinary three-velocity $\vec{v}$. Sometimes we will write this as $V^\mu \approx (1, \vec{v})$ (valid for small velocities).

Now comes the real magic. In pre-relativistic Newtonian mechanics, momentum is represented by a three-vector given by mass times velocity, $\vec{p} = m\vec{v}$. In the world of relativity, we define the four-momentum in an analogous way, as mass times four-velocity:

$$p^\mu = (p^0, p^x, p^y, p^z) = mV^\mu.$$

(6.16)

Comparing to (6.15), we see that the spatial components here are quite similar to the Newtonian expression for the momentum, with an extra factor of $1/\sqrt{1-v^2}$. What about the time component? We have

$$p^0 = \frac{m}{\sqrt{1-v^2}}.$$

(6.17)

So the time component of the four-momentum is just the mass of the object divided by a velocity-dependent factor.

As usual, we gain some intuition by considering small velocities (the “non-relativistic limit”). At this point let’s invoke a powerful mathematical trick. Whenever we have an expression $(1 + x)^n$, where x is a small number and n is some fixed exponent, a good approximation is given by

$$(1 + x)^n \approx 1 + nx + \dots \quad (6.18)$$

The dots indicate that there are more terms (an infinite number, when n is not a positive integer), but they will be proportional to x^2 , x^3 , and higher powers of x . Since we’re assuming x is very small, those higher powers will be even smaller and can be ignored.

Our ubiquitous factor of $1/\sqrt{1-v^2}$ is precisely of this form, where $x = -v^2$ and $n = -1/2$. (Taking the square root of a quantity is the same as raising it to the power $1/2$, and taking the reciprocal of a quantity is the same as raising it to the power of -1 .) So for small velocities we get

$$\frac{1}{\sqrt{1-v^2}} \approx 1 + \frac{1}{2}v^2. \quad (6.19)$$

Plugging this into (6.17), we find that

$$p^0 \approx m + \frac{1}{2}mv^2. \quad (6.20)$$

Hmm, that second part looks familiar; it’s the kinetic energy. Apparently the zeroth component of the four-momentum is an energylike thing that includes a constant term m plus the kinetic energy.

Here’s an idea: Let’s define the energy of an object in relativity to just be that zeroth component of the four-momentum:

$$E = p^0 = \frac{m}{\sqrt{1-v^2}}. \quad (6.21)$$

As a side benefit, this expression helps us understand why we can never accelerate a rocket to go faster than the speed of light. As v gets closer and closer to 1, the quantity $\sqrt{1-v^2}$ approaches zero, and $E = m / \sqrt{1-v^2}$ goes to infinity. It would take an infinite amount of energy to accelerate a finite-mass object to the speed of light, much less beyond it. That's not going to happen.

When the velocity is much less than the speed of light, we can use (6.20) to write

$$E \approx m + \frac{1}{2}mv^2. \quad (6.22)$$

We can think of the kinetic energy as “the energy of the object that is due to its motion,” and the other term, which is just the mass m , as “the energy that the object has even when it is at rest.” Call that the **rest energy**, $E_{\text{rest}} = m$.

The units aren't quite right, presumably because we've been setting $c = 1$. From the formula for kinetic energy we know that energy has units of mass times velocity squared. So we can fix the units by multiplying by c^2 . This leads us to a celebrated conclusion:

$$E_{\text{rest}} = mc^2. \quad (6.23)$$

You will most often see this without the “rest” subscript, but that's because we are being careful and other people are sometimes sloppy. The right way to think about this famous formula is that objects have energy even if they are sitting completely at rest, and that rest energy is equal to the mass times the speed of light squared. (Or you could think of what is meant by “the

mass” as “the value of the four-momentum in the object’s rest frame.” Either way works.)

This is the most famous example of the conceptual unification provided by special relativity. Energy and momentum aren’t two distinct ideas; *energy is the timelike version of momentum*. One of the wonderful features of physics is how disparate notions can be brought together by the power of a good theory.

* Lorentz’s work was so central to special relativity that the theory was occasionally referred to as “Lorentz–Einstein theory” in the early days. But Lorentz himself continued to cling to the idea of a luminiferous aether that defined an absolute frame of rest.

* Superscripts do look a lot like exponents, but in this case it’s just a label on the three components. You might wonder why we don’t just use subscripts, but once we get to general relativity we will need to use both, and they will stand for slightly different things.

SEVEN

GEOMETRY

When Hermann Minkowski suggested in 1907 that the best way to think about special relativity was in terms of a unified four-dimensional spacetime, Einstein was skeptical. He complained in print that Minkowski's approach "makes rather great demands on the reader in its mathematical aspects."

But Einstein soon grew to appreciate the spacetime formalism, especially as he turned his attention to the question of how to incorporate gravitation into relativity. He ultimately became convinced that gravity could be understood as a manifestation of the curvature of spacetime itself. That's a priceless insight, but it doesn't count as a real physical theory unless you can turn it into an appropriate set of equations. Such equations would come from geometry: in particular, **Riemannian geometry**, which allows spaces to be arbitrarily curved and studied from the inside, rather than requiring them to be embedded in some higher-dimensional space.

The problem was, Einstein didn't know anything about Riemannian geometry. Almost no physicist of the time did; the subject had only been initiated in the 1850s, and into the 1910s it hadn't found any special use within physics. Fortunately, one of Einstein's old classmates, Marcel Grossmann, had become a professor of mathematics and was an expert in the subject. Under Grossmann's tutelage, Einstein learned enough about geometry to formulate general relativity, his theory of gravity.

Now it's our turn. If Einstein had to put aside his other work to study up on Riemannian geometry, who are we to resist? The subject is sufficiently subtle and unfamiliar that we'll devote an entire chapter to it—there's little

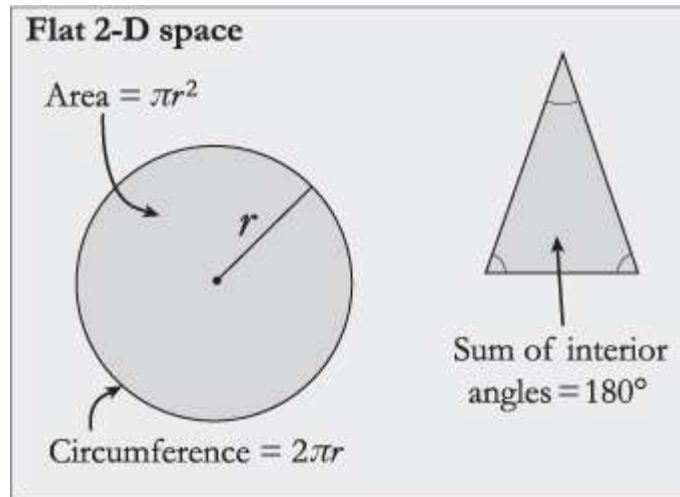
question that it qualifies as a Big Idea—and then we’ll put it to use in physics in the next chapter.

EUCLIDEAN GEOMETRY

We all have memories, pleasant or otherwise, of geometry from high school. There were a lot of triangles and circles and other shapes. The kind of geometry we learned back then is associated with Euclid, an ancient mathematician who worked in Alexandria not long after Aristotle was teaching in Athens. It can be thought of as “tabletop” geometry—properties of lines and curves that we can imagine drawing on a flat, two-dimensional surface. (Though it’s easy enough to generalize to three or more spatial dimensions.)

What makes Euclid so influential is not so much any particular results—theorems about properties of geometric objects—as it is the approach he pioneered. Indeed, **Euclidean geometry** encompasses a number of classic results, many of which predate Euclid’s work:

- Pythagoras’s theorem: the square of the length of the hypotenuse of a right triangle is equal to the sum of the squares of the other two sides.
- The angles inside a triangle add up to 180 degrees (π radians).
- The circumference of a circle is $2\pi r$, where r is the radius of the circle.
- The area of the interior of a circle (known as a “disk”) is πr^2 .

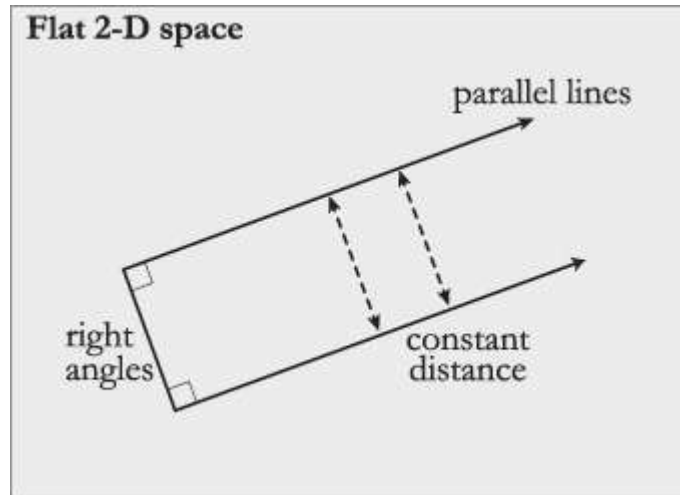


The distinctive feature of Euclidean geometry is that it defines an **axiomatic system**: We state a set of postulates, or axioms, and from them use the rules of logic to derive theorems. As long as you trust the basic rules of logic—which you should, although of course there are subtleties that philosophers care about—the theorems are as true as the axioms are. You don’t necessarily need to take any stance on whether you think the axioms are true; a theorem is just a statement to the effect that “if these axioms are true, this result is too.”

That’s a very different workflow from what we have in science. Science is empirical and **fallibilistic**—any of our scientific theories could be wrong, no matter how much evidence we have so far accumulated for them. Scientists suggest hypotheses about how the world behaves, test them against data, and adjust our credence in them accordingly. You can never be absolutely sure that your hypothesis is correct, since data could come in tomorrow that changes your mind. But in geometry, and in mathematics and logic more generally, you can be sure that if your axioms are true, your theorems will be too.*

For the most part, Euclid’s axioms are reasonable-sounding statements that make sense as a foundation for geometry. Things like “we can draw a straight line between any two points” and “all right angles are equal.” But there was one that always stood out as different: Euclid’s fifth postulate, known as the **parallel postulate**. One way of stating it is to construct two initially parallel lines in a plane, for example, by starting with a line segment and drawing two outgoing lines at 90 degrees to the segment.

Then, according to the parallel postulate, those initially parallel lines will always remain an equal distance from each other. (Euclid's actual way of stating it was more like "if the angles are less than two right angles, the lines will eventually intersect.")

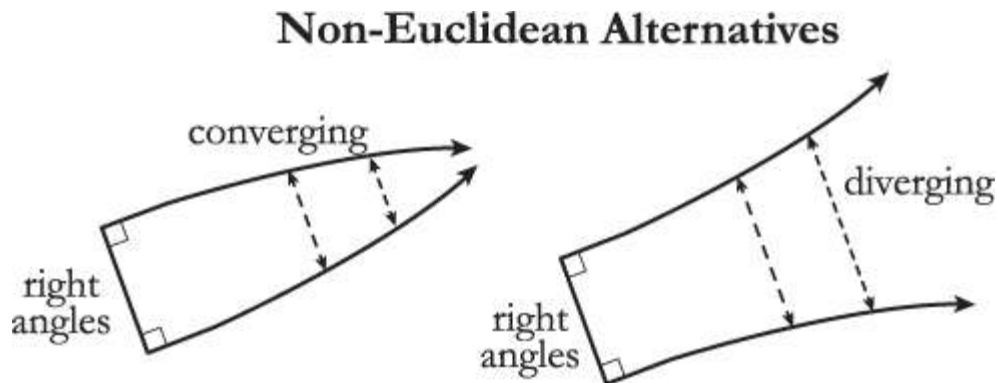


This also seems fairly reasonable, given our intuitions about how things work on a plane. (Mathematicians imagine planes that go forever in every direction, but we get pretty good intuition by thinking about tabletops or flat pieces of paper.) We do have to admit that it seems a bit more clunky than the others, however. For many years, geometers thought it might be possible to prove the parallel postulate just using Euclid's other axioms, thereby moving it from the "axiom" side of the ledger over to the "theorem" side. When I took geometry in high school, our teacher trolled us by offering extra credit to anyone who could correctly prove it. None of us succeeded.

NON-EUCLIDEAN GEOMETRY

I will not play the same trick on you. You're not going to prove the parallel postulate from the other axioms of Euclidean geometry, because it's not possible to do so. We know that because you can replace the parallel postulate with a different postulate to add to the other axioms and obtain distinct versions of geometry, completely consistent in their own rights.

It's easy enough to see what the replacement postulates should look like. If the parallel postulate says that two initially parallel lines will maintain the same distance forever, the alternatives will presumably say that they *don't* maintain the same distance. And there are two ways that could happen: The lines could come together, or they could diverge.



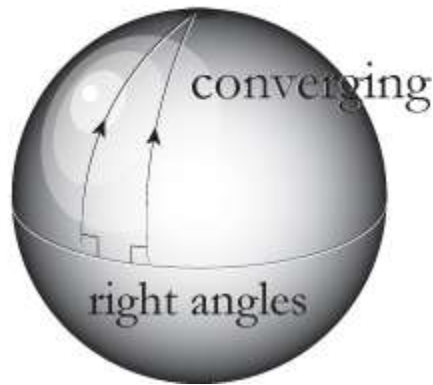
If you're worried that real straight lines don't behave that way, never fear. Our Euclidean intuition comes from our familiarity with the geometry of a plane or the equivalent. Planes are flat, not curved. These alternative postulates are supposed to hold for some kind of two-dimensional space, but a space with curvature, rather than the flat plane. Our alternative postulates define different kinds of geometries, cleverly named **non-Euclidean geometry**.

Which is not to say that the geometric systems based on these postulates are entirely abstract and hypothetical. There are, after all, two-dimensional shapes other than the plane, such as a sphere. (Whenever we talk about a sphere we just mean its surface, not the interior.) We can ask what would happen to two initially parallel lines on a sphere.

You might worry about what exactly we might mean by a "line," since nothing we draw on the surface of a sphere is going to appear perfectly straight. For the moment, just think about great circles or pieces thereof. A great circle is the curve we would find at the intersection of the sphere and a plane that passed through its center. The equator is an example, as are lines of longitude (not latitude!), but we can imagine great circles tilted at any angle.

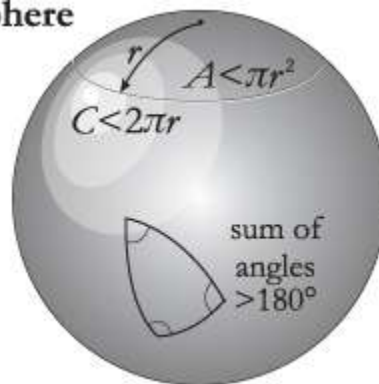
So consider a segment of the equator of a sphere, and two lines going north at right angles. Let them be as straight as possible—that is, great circles. Like it or not, they are going to meet—in this case, at the north pole.

Sphere



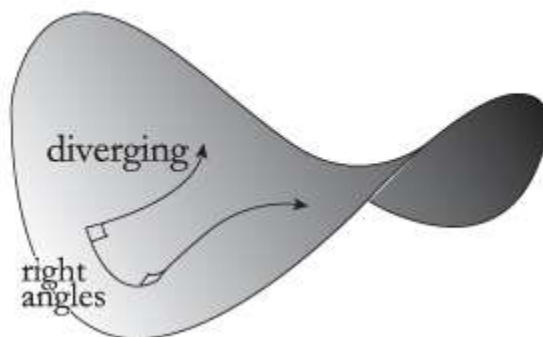
Other beloved features of Euclidean geometry also go wonky when we move from a plane to a sphere. Think of a circle of radius r , centered at the north pole. We can see from the picture that the circumference of this circle is *smaller* than $2\pi r$, and the area of the enclosed disk is smaller than πr^2 . (If our radius goes all the way to the south pole, the circumference would be zero.) Meanwhile, the angles inside a triangle will generally add up to *greater* than 180 degrees. Indeed, we can construct a triangle with three 90-degree angles inside, by joining segments that go one-quarter the way around great circles. Euclid must be rolling in his grave.

Sphere



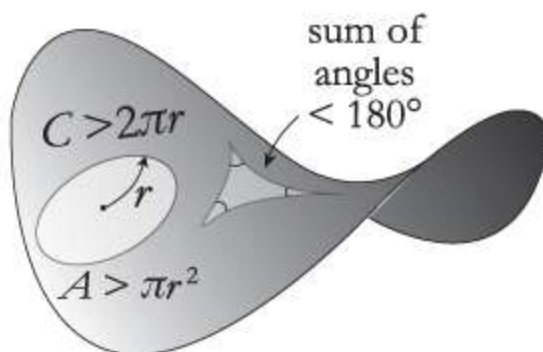
What about the case where initially parallel lines eventually diverge, rather than coming together? That one is harder to visualize, but it's similar to the shape described by a horse's saddle, or a Pringles potato chip.

Saddle



On a saddle-shaped geometry, properties of circles and triangles are once again modified, but in the opposite direction. For a circle with radius r , the circumference is going to be greater than $2\pi r$, the area of the enclosed disk is greater than πr^2 , and the angles inside a triangle will generally add up to less than 180 degrees.

Saddle



In each of these cases there is an additional simplifying assumption lurking in the background: that whatever the geometric properties of our two-dimensional space are, they are exactly the same everywhere, and in every direction. If we start with a line segment of fixed length and extend initially parallel lines perpendicular to it, they will diverge/converge by the

same amount, no matter where we stuck our segment or what direction it pointed in. The technical way of expressing this is to say that we are considering geometries of **constant curvature**, as opposed to curvature that changes from place to place or direction to direction. This makes things much easier, which of course means that we're going to unmake this assumption soon. It provides a natural starting point for a ride that will get wild quickly enough.

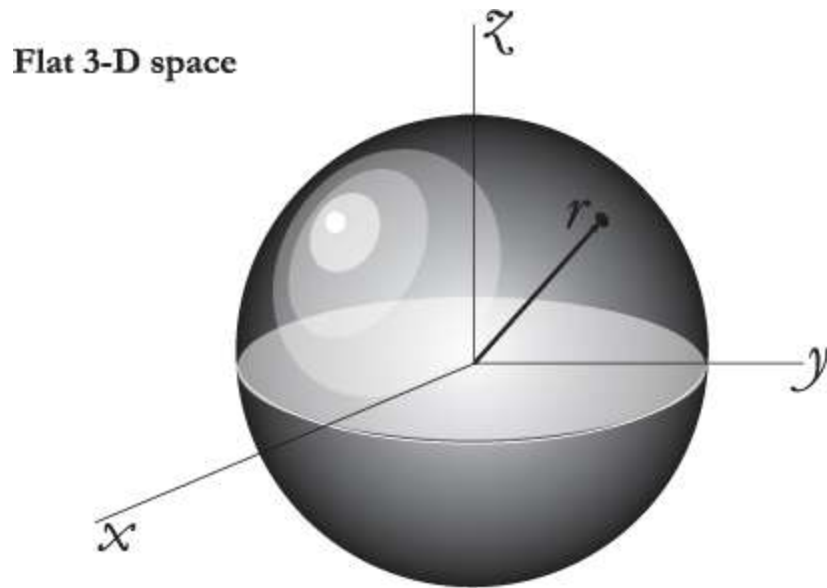
Once we're assuming constant curvature, there are only these three choices for the geometry of a two-dimensional space: Initially parallel lines stay parallel, converge, or diverge.

- Stay parallel: Euclidean geometry. Flat (zero curvature).
- Converge: Spherical (or elliptical) geometry. Positive curvature.
- Diverge: Hyperbolic geometry. Negative curvature.

INTRINSIC AND EXTRINSIC

The idea of non-Euclidean geometry didn't come onto the scene until the early nineteenth century, more than two millennia after Euclidean geometry. Nikolai Ivanovich Lobachevsky in Russia and János Bolyai in Hungary independently developed the basic ideas of hyperbolic geometry. It might seem puzzling, both that hyperbolic geometry was invented before spherical, and that it took so long in the first place. How hard is it to imagine drawing geometric shapes on a sphere, anyway?

These two questions—why did it take so long, and why did mathematicians stumble across hyperbolic geometry first?—in part answer each other. Of course everyone knew about spheres and had a basic idea of how lines and circles and angles worked on them. But they didn't imagine spheres as defining a separate kind of geometry. The two-dimensional spherical surface was thought of as **embedded** in three-dimensional Euclidean space. Indeed, one way of defining a sphere is “the set of all points at some distance R from a fixed point in space.” Nobody was motivated to invent a whole new kind of geometry to describe spheres. Their properties could be derived from good old Euclidean geometry in three dimensions, applied to this particular embedded shape.



Such is not the case for negatively curved surfaces. We can conceive of saddles or potato chips, of course, but close examination reveals that while these real-world examples have negative curvature, that curvature is not constant everywhere. There is a definite central point, and the curvature gradually declines as we move away from that point. No matter how clever we are, it's impossible to faithfully embed a two-dimensional space of constant negative curvature inside three-dimensional Euclidean space.

That's why the invention of hyperbolic geometry was a truly impressive intellectual achievement. We can write down a set of axioms that imply the geometric properties of two-dimensional space of constant negative curvature, sometimes called the **hyperbolic plane** (in contrast to the "flat" plane of Euclid). We can prove theorems within that system, derive formulas for the circumference of a circle and the area it encloses, and answer whatever other geometric questions we might pose. We just can't *build* such a space as a two-dimensional surface embedded in the space where we live. An exact hyperbolic plane exists only in our minds.

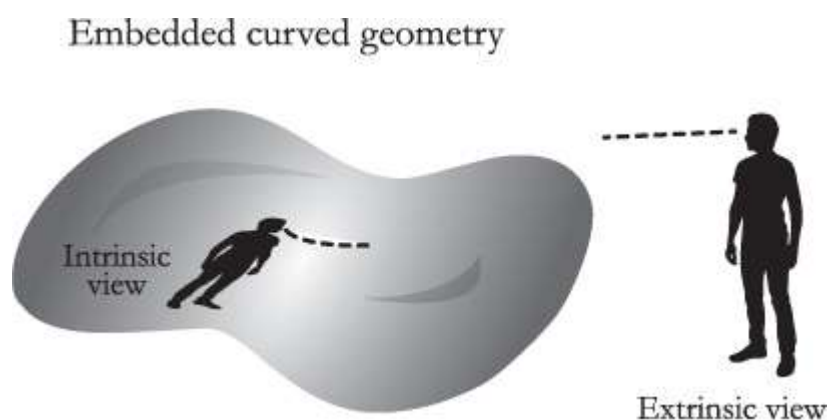
That's a big conceptual leap, as far as the history of mathematics is concerned. Freed from the self-imposed limitation of considering only objects we can actually build, mathematicians could study the implications of all sorts of axiomatic systems for their own sakes.

For our current purposes, the major ramification is the idea that we can study the **intrinsic** geometric properties of a space, as opposed to the

extrinsic properties it inherits from being embedded in a larger space. This distinction was developed by Carl Friedrich Gauss, one of the greatest mathematicians of all time. (Gauss, who was famously slow to write up his results, also claimed to have invented hyperbolic geometry before Lobachevsky and Bolyai. But he never published anything about it, and you don't get credit for good ideas you keep to yourself.)

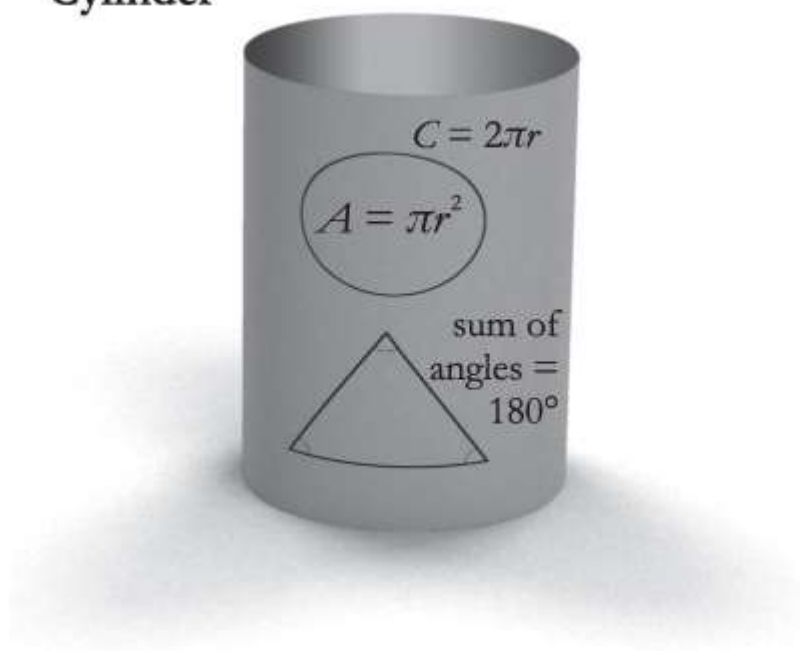
When we look at shapes drawn on a tabletop, or a sphere in three-dimensional space, we naturally perceive it from the outside. "Curvature," from that perspective, tells us how the shape bends and twists within the bigger space in which it's embedded. That's extrinsic curvature.

But we can also imagine how things would be perceived by imaginary beings that lived inside the shape. They could draw a circle and measure its circumference, for example. The result has nothing to do with how the shape is embedded in a bigger space; there doesn't even need to be any such space. The features that can be measured purely from the inside define the intrinsic geometry of the space.



For a dramatic example of the distinction between intrinsic and extrinsic curvature, consider a two-dimensional cylinder embedded in three-dimensional space.

Cylinder



A cylinder sure *looks* curved, but that's an artifact of our external perspective. What we're perceiving is the extrinsic curvature, but intrinsically the cylinder is perfectly flat. You can check that by imagining drawing initially parallel lines and seeing whether they converge or diverge, or by drawing a triangle and adding up the interior angles, or by verifying the relationship between the radius of a circle and its circumference and area. In every case, the intrinsic geometry of the cylinder is the same as that of a flat plane.

We're dwelling on this because ultimately we're going to want to talk about the curvature of spacetime itself. Our universe isn't embedded in some bigger space; at least, it doesn't have to be, as far as we know. When it comes to spacetime, intrinsic geometry is all we have.

MANIFOLDS

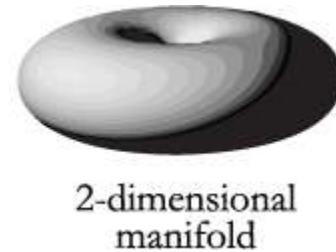
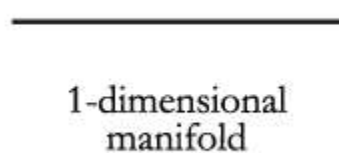
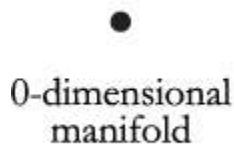
Besides appreciating the distinction between intrinsic and extrinsic curvature, Gauss also pioneered the study of cases for which the curvature is *not* constant—spaces where curvature varies in amount and shape from place to place. But when it came to developing the full-blown theory of

such arbitrary geometries, he handed the work off to his student Bernhard Riemann.

In 1853, Riemann was at the stage in his studies where it was time to give a lecture to complete his *Habilitation*, a qualification in the German system that is one step beyond the doctoral degree and is often a requirement to be allowed to teach university students. (For his doctoral work Riemann had pioneered the use of complex numbers to study two-dimensional surfaces, and the bulk of his *Habilitation* research was devoted to putting integral calculus on a rigorous footing. He was an ambitious and productive young man.)

The story goes that Riemann sent a list of possible lecture topics to Gauss, who surprised his student by picking the topic Riemann thought was the least interesting of the lot: the foundations of geometry. The assignment forced Riemann to sit back and think hard about what we really meant by “the geometry” of a space, and indeed what kind of “space” we are talking about, especially from the intrinsic insider’s view. (Early in his lecture he complains that he was “not practiced in such undertakings of a philosophical nature,” but he did pretty well at them.) He ended up writing one of the most influential papers in the history of mathematics, the results of which still sit at the heart of general relativity and the modern view of spacetime. Unfortunately Riemann died early of tuberculosis, or he may have derived any number of further foundational results in mathematics.

Riemann started his discussion by defining the notion of a **manifold**—an infinite set of points smoothly connected into a space of some definite dimensionality. Remember that when we zoom in closely, every curve looks like a straight line. Manifolds are constructed from the same kind of insight, but in more than one dimension. In a curved space, if we zoom in sufficiently close, things look like Euclidean geometry. The curvature that manifests itself on larger scales can be encoded in how infinitesimal bits of flat space are sewn together globally.



The crucial thing about manifolds is that they don't need to be embedded in any other space, even if we sometimes draw them in ways that suggest they are. When we portray two-dimensional manifolds like a sphere or a torus, it's the two-dimensional surface we are thinking about, not the three-dimensional space in which they are embedded. That's just an artifact of how we three-dimensional creatures represent things. Manifolds have a well-defined topology and geometry in their own right—always think intrinsically, not extrinsically.

GENERALIZING PYTHAGORAS

Next, we have to decide how to specify the geometry of a manifold, once again referring only to intrinsic notions that could be measured by beings living inside. There are potentially a large number of ways to do this. The goal is to stipulate some basic geometric quantities of the manifold, from which anything else we might want to calculate can be derived.

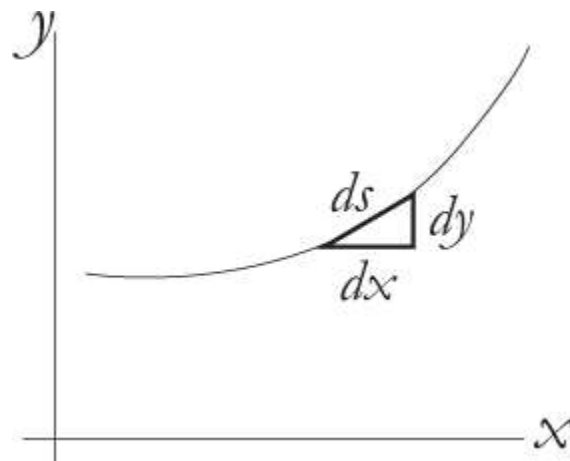
The quantities that Riemann settled on were the lengths of curves. Not just one special curve: any curve we might contemplate drawing within the manifold. If you know the length of every possible curve you can draw, from that you can figure out anything you might want to know about the geometry.

It seems like an intimidating task, to specify the length of every possible curve. Even on simple manifolds like the sphere or the plane, there are an awful lot of curves we can draw. Happily, we have a tool for dealing with this unwieldy menagerie: calculus. We don't need to literally write down the length of every curve; we just need to give a formula for calculating the length of an infinitesimally small piece of a curve. Then we can get the entire length by integrating that infinitesimal piece.

To work up some intuition, consider a flat two-dimensional plane with Cartesian coordinates (x, y) . Someone draws a curve of some sort on the plane, and we want to calculate the length ds of an infinitesimal piece of that curve in terms of infinitesimal displacements in the coordinates, dx and dy . We already know the formula for that: It's just Pythagoras's theorem. [If the notation here is giving you flashbacks to [equation \(6.10\)](#) for the length of a spacelike segment in Minkowski spacetime, that's entirely intentional.]

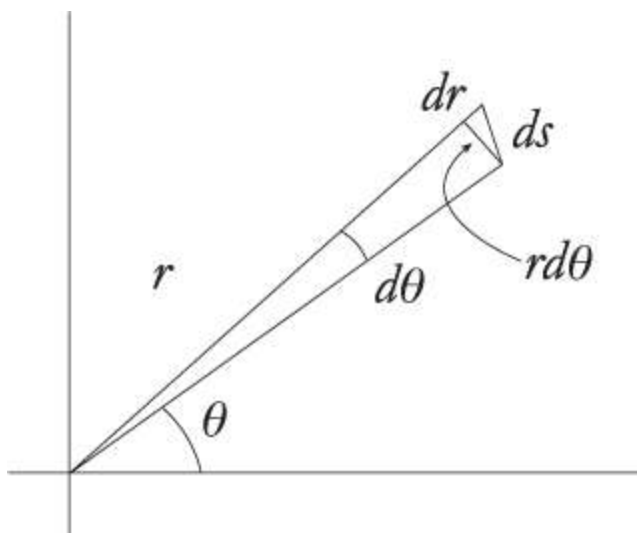
$$ds^2 = dx^2 + dy^2.$$

(7.1)



That's straightforward enough. But Cartesian coordinates are very special. Lines of constant x are all perfectly straight and always parallel to each other, as are lines of constant y . If the parallel postulate doesn't hold—if your manifold is not Euclidean—you can't draw coordinates like that everywhere. There are no Cartesian coordinates that cover a sphere, for example.

Even when our manifold is flat, we aren't forced to use Cartesian coordinates. Think about **polar coordinates** on a plane, where we specify a point in terms of its distance r from the origin and its angle θ from the horizontal axis. Consider the length of an infinitesimal segment in terms of these coordinates.



The physical length corresponding to an angular change $d\theta$ isn't a fixed amount; it grows larger as r increases. The length of a tiny segment at fixed r is going to be not $d\theta$ but $rd\theta$. That's straightforward enough to accommodate. The correct formula for an arbitrary infinitesimal segment is

$$ds^2 = dr^2 + r^2 d\theta^2. \quad (7.2)$$

That's almost Pythagoras, but not quite. There's an extra factor of r^2 in front of the $d\theta^2$ piece. That extra factor encodes the idea that an increment $d\theta$ corresponds to more and more physical length as r increases. Essentially we are keeping the spirit of Pythagoras, but allowing for a slightly more general formula to relate physical distances to increments in coordinate values.

THE LINE ELEMENT

With that example as inspiration, what we want to understand is an idea called the **line element**—a general formula that can take an infinitesimal segment, characterized by infinitesimal displacements in each of the coordinates, and use those displacements to calculate the length ds of that

segment. Let's start by sticking with two-dimensional manifolds for simplicity.

Imagine we have two coordinates (x^1, x^2) , where these superscripts are indices, not exponents. (Just like we did for components of vectors.) We want to relate the distance ds to the coordinate displacements dx^i . Following our Pythagorean inspiration, we expect we should relate the squared distance ds^2 to squares of the coordinate displacements, like $(dx^1)^2$ —that's the square of dx^1 , so we're forced to use superscripts as both an index and an exponent in the same expression. And to be perfectly general we should allow for “cross terms” that multiply separate coordinates, like $dx^1 dx^2$. Finally, as we learned from polar coordinates, there can be coefficients multiplying these terms, which themselves can depend on the coordinates.

The most general such formula for the two-dimensional line element takes the form

$$ds^2 = A(x^1, x^2)(dx^1)^2 + B(x^1, x^2)dx^1 dx^2 + C(x^1, x^2)(dx^2)^2. \quad (7.3)$$

That's a lot of parentheses and superscripts, so let's take a breath and look at what's going on. The three quantities A , B , and C are numbers that take on specific values at each point on the manifold, so we have written them as functions of the coordinates (x^1, x^2) . Each of them multiplies a product of two of the coordinate displacements dx^1 and dx^2 . We have not only a term proportional to $(dx^1)^2$ and one proportional to $(dx^2)^2$, but also a new term proportional to $dx^1 dx^2$. That will be relevant if the coordinates are not perpendicular.

Here's why this expression is so important: Once you have told me the three functions $A(x^1, x^2)$, $B(x^1, x^2)$, and $C(x^1, x^2)$, the formula (7.3) gives us a way to calculate the length of *any* curve we draw. And that information, says Riemann, is sufficient to completely determine the geometry of the manifold. Everything we ever want to know—angles, areas, curvature—is contained in just those three functions. A similar story will hold in more than two dimensions, although the number of functions will be somewhat

larger. In a d -dimensional space, it takes $d(d + 1)/2$ functions to fully specify the line element.

Not that it's going to be simple to extract the geometric information we care about from these functions. The problem is that the line element can look very different in different coordinate systems, even if the underlying geometry is exactly the same. We've already seen this in the case of the flat plane. In Cartesian coordinates, the line element (7.1) is of the form (7.3), with

$$A(x, y)=1, B(x, y)=0, C(x, y)=1. \tag{7.4}$$

While in polar coordinates, the line element (7.2) corresponds to

$$A(r, \theta)=1, B(r, \theta)=0, C(r, \theta)=r^2. \tag{7.5}$$

Same geometry, but different versions of the line element, because we're in different coordinate systems. Geometry doesn't care about coordinate systems; those are human contrivances, not intrinsic features of the manifold. We're going to have to work just a bit harder to squeeze information about curvature out of these line elements.

THE METRIC

We're also going to have to invent some slick new notation. Good notation is its own reward, but the number of independent functions needed to specify the line element is going to quickly become unwieldy in higher numbers of dimensions.

This shouldn't be too hard, because we see the pattern from (7.3): For every pair of coordinate displacements dx^i and dx^j (where i and j are indices that run over the number of dimensions, and may be the same values or different), we assign a function of spacetime. We can label these functions as $g_{ij}(x)$, where now the unadorned variable x stands for all of the

coordinates at once. The letters i and j have no meaning in and of themselves; they are just labels for the values of the indices, we can use whatever letters we like. So g_{11} is the function multiplying $(dx^1)^2$ in the line element, g_{12} is the function multiplying $dx^1 dx^2$, and so on.

These functions can be written in the form of a matrix,* for example, in three dimensions:

$$g_{ij} = \begin{pmatrix} g_{11} & g_{12} & g_{13} \\ g_{21} & g_{22} & g_{23} \\ g_{31} & g_{32} & g_{33} \end{pmatrix}. \quad (7.6)$$

This is the famous **metric tensor**, the object that will be at the center of our attention when we turn to general relativity. Each entry in the matrix, known as a **component** of the metric, is a separate function of position. Knowing all of those components tells us everything we need to know about the geometry of the manifold under consideration. Typically when a physicist is doing some research problem in general relativity, they are either trying to figure out what the metric is (for example, in the presence of a certain distribution of matter and energy), or working out the physical consequences of some particular form of the metric. (In relativity our metric will be on spacetime, not just space, but that turns out to make surprisingly little difference to the mathematical formalism. We'll just use Greek letters to label components.)

Knowing the metric is precisely equivalent to knowing the line element. The relationship is simply

$$\begin{aligned} ds^2 &= \sum_{i,j} g_{ij} dx^i dx^j \\ &= g_{11} (dx^1)^2 + g_{12} dx^1 dx^2 + g_{13} dx^1 dx^3 + \dots \end{aligned} \quad (7.7)$$

So if we know all the components of the metric, we can calculate the length of any curve. From there, although it may not be obvious, we can also calculate areas and volumes, angles between lines, and much more.

Our two-dimensional line element (7.3) fits into this pattern, as it must. In this case we have

$$g_{ij} = \begin{pmatrix} g_{11} & g_{12} \\ g_{21} & g_{22} \end{pmatrix} = \begin{pmatrix} A & \frac{1}{2}B \\ \frac{1}{2}B & C \end{pmatrix}. \quad (7.8)$$

We see that B appears twice but is divided in half both times. That's because a literal application of the formula (7.7) gives us separate contributions for $dx^1 dx^2$ and $dx^2 dx^1$, but those are equal to each other. We therefore require that the metric be symmetric: For each i and j we have $g_{ij} = g_{ji}$. From the point of view of the matrix version, components in the upper right will be equal to their corresponding components in the lower left.

Let's bring this down to Earth with some examples. We can start with familiar territory: flat three-dimensional Euclidean space in Cartesian coordinates (x, y, z) . There we know what the line element is; it just comes from Pythagoras's theorem.

$$ds^2 = dx^2 + dy^2 + dz^2. \quad (7.9)$$

The metric tensor, written as a matrix, couldn't be simpler:

$$g_{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}.$$

(7.10)

(Henceforth we assume you recognize that the upper left component is g_{11} , the one to the right of that in the upper row is g_{12} , and so on, so we won't write that notation explicitly.) This is the **Euclidean metric**, which can be extended to any other number of dimensions by adding more rows and columns, keeping 1's on the diagonal and 0's everywhere else. Euclid himself was implicitly using it all the time, though he wasn't thinking in those terms. The metric defines the geometry.

But there are also non-Cartesian coordinate systems. For polar coordinates in two dimensions (r, θ) , we can read off the answer from (7.2):

$$g_{ij} = \begin{pmatrix} 1 & 0 \\ 0 & r^2 \end{pmatrix}.$$

(7.11)

It should be clear that the components of a metric are always relative to a certain coordinate system. An expression like (7.11) is only meaningful if you know that we are using (r, θ) coordinates, with $x^1 = r$ and $x^2 = \theta$.

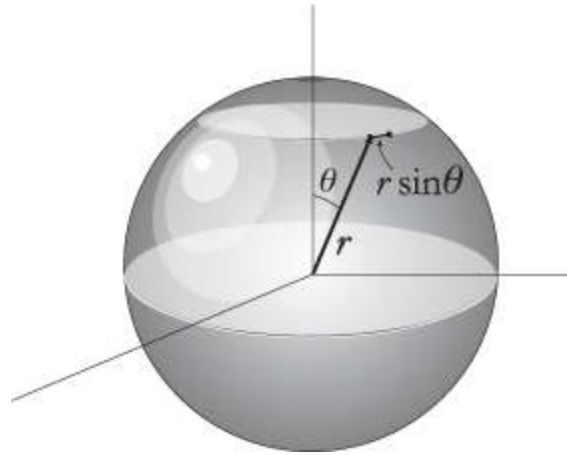
There is also the three-dimensional version of polar coordinates, the spherical coordinates (r, θ, ϕ) we mentioned in Chapter 4. The metric for flat space in these coordinates is

$$g_{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & r^2 & 0 \\ 0 & 0 & r^2 \sin^2 \theta \end{pmatrix}.$$

(7.12)

As the angle θ goes from zero at the north pole to 90 degrees at the equator then to 180 degrees at the south pole, $\sin\theta$ goes from 0 to 1 then back to 0. Its appearance in the g_{33} component, bottom right corner of (7.12), reflects

the fact that the physical distance associated with a change in $x^3 = \phi$ is small near the poles and larger near the equator.



It cannot be overstressed that the geometry defined by (7.12) is the same geometry as that defined by (7.10). Both are “the Euclidean metric”—flat space—but one is expressed in Cartesian coordinates and the other in spherical coordinates.

THE METRIC ON CURVED SPACES

Let’s look at a manifold with some curvature. The easiest example of that is the two-dimensional sphere. Happily, it’s pretty easy to guess the metric on a sphere once we’ve written down the metric (7.12) for flat space in spherical coordinates. A sphere is just the subset of flat space that we get from fixing the radial coordinate r to be some specific value R . So we can get the metric on a sphere by starting with (7.12), erasing the top row and leftmost column (since those tell us about distances in the r direction, which don’t exist when we’re confined to the sphere), and setting $r = R$. The result is the metric on a sphere in $(x^1, x^2) = (\theta, \phi)$ coordinates:

$$g_{ij} = \begin{pmatrix} R^2 & 0 \\ 0 & R^2 \sin^2 \theta \end{pmatrix}.$$

(7.13)

This bears a family resemblance to (7.12), the three-dimensional Euclidean metric in polar coordinates, but it's a very different beast. Here R is a fixed parameter telling us how big our sphere is, not a coordinate. And most important, this metric is not flat. It's a bit challenging to simply look at a metric and figure out whether it's flat or curved. Different choices of coordinates can obscure the underlying geometry.

Let's turn to the metric for the two-dimensional hyperbolic plane, as investigated by Lobachevsky and Bolyai (although they didn't call it that any more than Euclid did). As always, the first question is what coordinate system to use. A convenient one is known as the **Poincaré disk**. (It was first used by Eugenio Beltrami and only later by Henri Poincaré, but Poincaré is more famous, and famous people tend to get their names attached to things.)

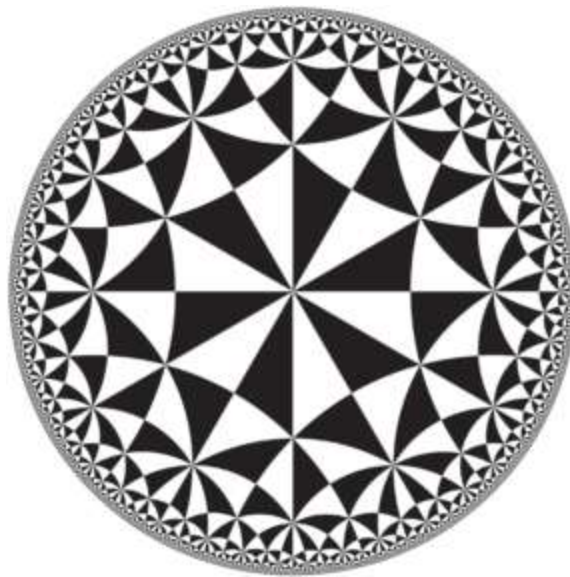
The coordinates are generally labeled $(x^1, x^2) = (x, y)$, which makes us think of Cartesian coordinates on a plane, but there is an additional restriction that $r < 1$, where r is a radial coordinate measured from the origin. In this coordinate system the metric on two-dimensional hyperbolic space is

$$g_{ij} = \begin{pmatrix} \frac{4}{(1-x^2-y^2)^2} & 0 \\ 0 & \frac{4}{(1-x^2-y^2)^2} \end{pmatrix} = \begin{pmatrix} \frac{4}{(1-r^2)^2} & 0 \\ 0 & \frac{4}{(1-r^2)^2} \end{pmatrix}. \quad (7.14)$$

There are a few things going on here. The actual coordinates are (x, y) , but in the second expression we've written the metric components in terms of $r = \sqrt{x^2 + y^2}$. That's no problem, you should just remember that r is a function of x and y . More significantly, the hyperbolic plane is infinite in size—it's a saddle shape extending infinitely far in all directions—but the

coordinates we've used reach out to a finite value of r . That's perfectly okay. Remember all the way back in [Chapter 2](#) where we noted that we can map an infinite length to a finite interval and back. That's what's going on here. The Poincaré disk *is* infinite in size, we've just covered it with coordinates that extend only over a finite interval.

In fact, you can tell that the space really is infinitely big, just from staring at the metric (7.14). Think about what happens as we approach the edge of the disk, $r \rightarrow 1$. Both of the nonzero metric components contain a factor $1/(1-r^2)^2$. As r gets closer and closer to 1, $(1-r^2)$ gets closer and closer to 0, so $1/(1-r^2)^2$ blows up to infinity. Physically, that means that any given coordinate increment dx or dy corresponds to a bigger and bigger actual distance. Even though the coordinates only reach over a finite interval, the physical size of the manifold being described is infinitely big. That's the magic of the metric at work.



The figure above shows a representation of hyperbolic space in Poincaré-disk coordinates, tessellated by triangles. The triangles look like they get smaller and smaller as they approach the edge, but that's an illusion caused by our coordinate system. In the metric (7.14), all of these triangles have the same size, and for that matter the same shape. There are an infinite number of them, squeezed down near the disk's edge. Dutch artist M. C.

Escher famously made a series of engravings, which he dubbed *Circle Limit*, based on the geometry portrayed in this figure.

TENSORS

The metric on a manifold tells us how to calculate distances. We referred to it as the metric “tensor” but didn’t explain what a tensor was more generally. What’s up with that?

The idea of a *function* on a manifold is simple enough. It’s a map from points on the manifold to the real numbers: an assignment of a number (the value of the function at that point) to each point. We might use a function to answer a question like “What is the density of matter at each point?” We’re also familiar with *vectors*, which have both a magnitude and a direction. Vectors answer questions like “What is the velocity of a particle on this particular trajectory?”

Sometimes we want to answer more complicated questions, which may involve multiple vectors or directions in space. Maybe we want to know “how much overlap is there between vectors $\vec{v}$ and $\vec{w}$?” Or “how would a set of initially parallel trajectories twist around as they move through curved space?” **Tensors** are geometric quantities that contain the requisite information to address these more involved questions. Functions and vectors are kinds of tensors, but to think productively about curved spacetime we’re going to need some more elaborate versions.

There are two ways to think about tensors, both of which are useful in different circumstances. One is the way we’ve already been using: as arrays of components, with each component labeled by a set of indices. All of those matrix presentations of the metric are examples of tensors in this sense. There are fussy requirements about how the components change when we change coordinates, but we don’t have to worry about those.

The components of a square matrix have two indices (one indicating which row, another indicating which column). But tensors don’t have to be square matrices. They can have any number of indices, and the values of the indices always run over the number of dimensions of the manifold we are thinking about.*

A vector is just a tensor with one index. We think of a vector $\vec{v}$ as an arrow with a length and a direction, but given a coordinate system such as

(x, y, z) we can express the vector in terms of its components, which are the projections of the vector along each axis:

$$v^i = \begin{pmatrix} v^x \\ v^y \\ v^z \end{pmatrix}.$$

(7.15)

So a vector is just a tensor with a single index, while the metric is a tensor with two indices. An ordinary function is a tensor with zero indices. And there can be more indices, which makes the tensor hard to represent as an array of components, but it can be done if you really try. For example, you can think of a three-index tensor as a vector of two-index tensors:

$$T^{ijk} = \begin{pmatrix} T^{1jk} \\ T^{2jk} \\ T^{3jk} \end{pmatrix} = \begin{pmatrix} \begin{pmatrix} T^{111} & T^{112} & T^{113} \\ T^{121} & T^{122} & T^{123} \\ T^{131} & T^{132} & T^{133} \end{pmatrix} \\ \begin{pmatrix} T^{211} & T^{212} & T^{213} \\ T^{221} & T^{222} & T^{223} \\ T^{231} & T^{232} & T^{233} \end{pmatrix} \\ \begin{pmatrix} T^{311} & T^{312} & T^{313} \\ T^{321} & T^{322} & T^{323} \\ T^{331} & T^{332} & T^{333} \end{pmatrix} \end{pmatrix}$$

(7.16)

I don't know why you would want to do that, but you're allowed. Once you have more than two indices, it's easier just to think about the individual components rather than writing the tensor as some big array.

The other way of thinking about tensors is as a map from one set of tensors to another tensor. Yes, that sounds circular, but it all hangs together in the end. For example, if you have two vectors v^i and w^j , you can make a number out of them using the metric. So you can think of the metric tensor as being a black box; you put two vectors in, and a number comes out.



The number in question is obtained by matching up indices on the metric with indices on the vectors, then summing over every index that is repeated both upstairs and downstairs.

$$\begin{aligned}
 g(v, w) &= \sum_{ij} g_{ij} v^i w^j \\
 &= g_{11} v^1 w^1 + g_{12} v^1 w^2 + g_{21} v^2 w^1 + \dots
 \end{aligned}
 \tag{7.17}$$

This is a famous construction, at least among people who spend their time pushing vectors around: It's the **inner product**, or “dot product,” between the two vectors:

$$\vec{v} \cdot \vec{w} = \sum_{ij} g_{ij} v^i w^j.
 \tag{7.18}$$

In ordinary Euclidean space, the dot product of two vectors is the product of the length of both vectors times the cosine of the angle between them. When the vectors point in the same direction, the dot product is just the product of their lengths, and when they are perpendicular the dot product is always zero.

A tiny secret is thereby revealed: The metric doesn't tell us only the length along curves, it also defines what we mean by "perpendicular." Two lines intersecting at a point are perpendicular when the inner product of two vectors pointing along them at that point vanishes. We can begin to see how the metric is determining everything we need to know about the geometry of a space.

You may have noticed that sometimes we write indices as superscripts (as on vectors and coordinates) and sometimes as subscripts (as on the metric). This is not a whimsical choice; superscript and subscript indices are distinct in important ways. All we need to know at the moment is that when we sum over indices, as in (7.17), we are only allowed to do so when one of the summed indices is upstairs and the other is downstairs. Any index that is summed over is called a **dummy index**, while one that is not summed over is a **free index**. Free indices can take any value—as long as the same index takes the same value in every term of an equation—while dummy indices don't have a "value." They are just shorthand for "add up every possible value of this index."

Summing over dummy indices happens so often in tensor analysis that Albert Einstein invented a helpful trick, known as the **Einstein summation convention**. Whenever we have a tensor or product of tensors where one or more indices are repeated both upstairs and downstairs, we can leave out the explicit summation sign and just assume they are being summed over. Thus we have, for example,

$$g_{ij}v^i w^j = \sum_{ij} g_{ij}v^i w^j.$$

(7.19)

Upon coming up with this innovation, Einstein joked to a friend, "I have made a great discovery in mathematics!" Summing over repeated indices

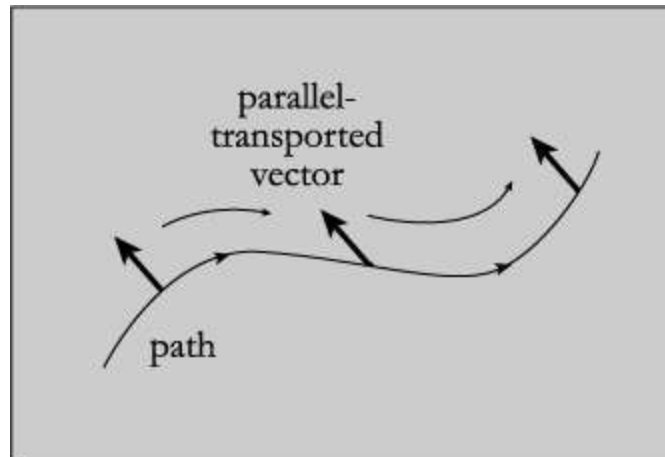
isn't a deep concept, but adopting this helpful convention does save a great deal of time in a subject like general relativity.

PARALLEL TRANSPORT

Riemann's great insight was that the metric on a manifold contains all the information you need to extract its curvature and any other geometric information you might be interested in. Let's think how we can go about extracting that information. Our first step will be to push vectors around from place to place, because how they travel will be affected by the underlying curvature. For the rest of this chapter the mathematical machinery becomes cumbersome, so we're going to hit some highlights while relegating details to [Appendix B](#).

Imagine you are standing at some location within a curved manifold, and you are holding a vector. Maybe you have a spinning gyroscope whose axis points in some spatial direction. And you have a friend some distance away who also has a vector. You would like to compare these two vectors: Are they pointing in the same or different directions, is one longer than the other, and so on. How can we do that?

In flat space—where most of our intuition comes from—this seems like a silly question. You could just walk over to your friend, carrying your vector along with you while keeping it fixed, and compare when you get there. But what does it mean, “keeping it fixed”? One answer is to set up a traditional Cartesian coordinate system and just keep all of the components of our vector constant. That allows us to move it from place to place, no problem.

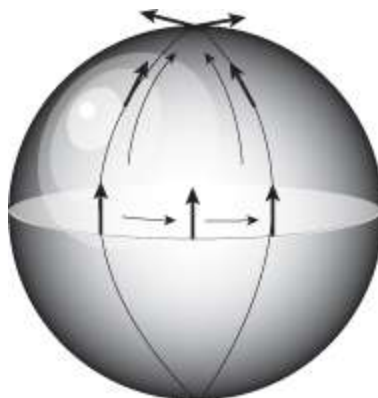


The problem is that this procedure doesn't work in non-flat geometries. There are no "Cartesian coordinates," because the existence of such coordinates relies on a flat metric. But maybe that's just a technical complication, and we can somehow do the moral equivalent of keeping a vector constant as we move it.

We can. **Parallel transport** is the process by which we can start with a vector defined at some point and move it down a specified path, doing our best at each step to keep it parallel to its previous orientation. (As you might guess, the steps will be infinitesimally small, so we'll use calculus to chug the vector from point to point.)

But a subtlety arises. In flat space, not only did it seem intuitive, what we meant by "keep the vector constant," but it also didn't matter what path we took to move the vector from place to place. In a general curved space that's not going to be true, as we can see by thinking about parallel transport on a two-dimensional sphere.

Start at a point on the equator, and with a vector pointing north. Walk up to the north pole, doing your best to keep the vector constant; it's not that hard, as the vector will keep pointing in our direction of motion. But then imagine instead that we had walked for a while along the equator, also keeping the vector constant. In that case we would keep the vector pointing north. Then after some distance, we make a right-angle turn and head up to the pole, taking our vector with us.



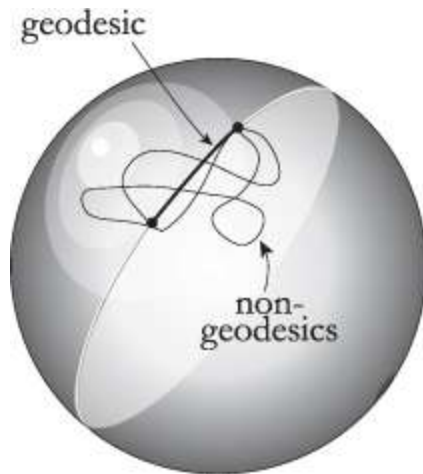
These two different routes from our point on the equator to the north pole have left us with two vectors pointing in obviously different directions, even though we did our best to keep the vectors constant the whole time. That wouldn't have happened in flat space, but on a sphere it's inevitable: Parallel transport along different trajectories generally leads to different outcomes. As we'll see in a moment, this failure of the two paths to give us the same results provides a nice way to formalize what we mean by "curvature." (Note that this operation is entirely intrinsic to the sphere—we don't have to look at it from the outside in order to parallel-transport a vector.)

We're bumping into a deep, and sometimes hard to internalize, feature of curved space (or spacetime): There is no unique way to compare vectors at different points. We can parallel-transport a vector along some particular curve, but using a different curve might give us a different answer. This means, for example, that we can't really talk about "the velocity" of a distant galaxy in an expanding universe. We do talk about that all the time, but implicitly we're making certain arbitrary choices about how to compare the vectors. That's okay, but we should keep in mind what is unique and well defined versus what just seems convenient. This is a version of the same lesson we preached in the context of the twin thought experiment in [Chapter 6](#)—it's best to think locally and compare quantities defined at the same point rather than to fool ourselves into comparing things going on far away.

GEODESICS

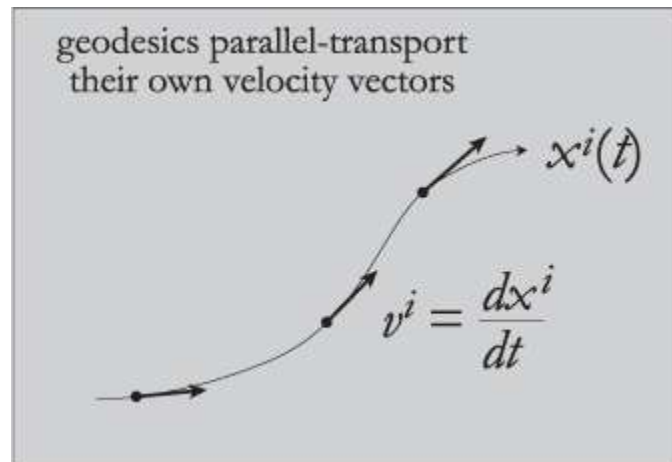
At the beginning of [Chapter 3](#) we mentioned two ways of constructing a straight line between two trees. One was to stretch a string and pull it taut—a down- to-earth way of making a shortest-distance path—and the other was to just keep walking in a fixed direction. Both methods yielded the same result. And that continues to be the case on a general curved manifold in Riemannian geometry, although when space is curved it might not be natural to think of the resulting trajectory as “straight.” On a sphere, for example, these paths are great circles or pieces thereof.

A path that minimizes the distance between two points (or maximizes the proper time, once we get to spacetime) is known as a **geodesic**. Geodesics obey an equation ([Appendix B](#)) that can be derived in a very similar way to how we thought about the principle of least action back in [Chapter 3](#). There, we considered every path a particle could take, associated an action with each possibility, and demanded that the action have zero derivative in the space of possible paths. Finding geodesics is precisely analogous, except we’re minimizing the length of a curve rather than the action of a particle trajectory.



In addition to being shortest-distance paths, geodesics are also what you get if you just keep walking in a straight line. The formal version of that idea makes use of parallel transport. Consider a path, specified by the sequence of points making up the path, and also a parameter that tells us where we are along the path. We could write $x_i(t)$, for example, where x^i are

the coordinates in however many dimensions we are in, and t is the parameter along the path. (Often the parameter really is “time,” but here we’re just using t as a convenient variable.) Then there is a vector, the velocity $v^i = dx^i/dt$, that points along the direction in which we are moving, with a length given by our speed.



To “keep moving in the same direction” is to keep our velocity vector as constant as possible as we travel. That’s just what parallel transport does. So another way of defining a geodesic is as “a path whose velocity at each point is just what we get by parallel-transporting the initial velocity vector.” That’s how, at the end of the day, the process of parallel transport is related to the metric tensor: Curves that parallel-transport their own velocity vector must also be curves of minimum length.

CURVATURE

Here’s where we are: The metric tensor is the most basic geometric structure a manifold can have. It lets us calculate the distance along a path, areas and volumes of higher-dimensional regions of space, and the inner product between vectors. It also tells us how to parallel-transport vectors along a curve. That provides a nice way of thinking about geodesics—as curves that parallel-transport their own velocities in addition to being shortest-distance paths. But parallel transport is also crucial to the final

piece of the puzzle: a complete characterization of the ways in which a space can be curved.

The sphere and the hyperbolic plane are both curved manifolds, but their curvature is as simple as it can be; the curvature looks the same at every point and in every direction. We'd like to be able to write down a robust, local characterization of how much curvature a manifold has at each point. The metric, as we've seen, isn't perfect for the job all by itself, since it can look simple or complicated in different coordinate systems even if the underlying geometry is the same. We'd like to define a quantity—a tensor of some sort, perhaps—that immediately reveals how curved a space is; one that is zero when space is flat and not zero when space is curved.

When we parallel-transported a vector along two different paths on a sphere, we ended up with two different vectors at the north pole. Equivalently, we could have started at the north pole and worked our way down to the equator, over, and back, traveling around a closed loop. This is the crucially important insight: If we parallel-transport a vector around a closed loop, it won't necessarily line up with the original vector upon its return. At least, not if the space through which it's moving is curved.

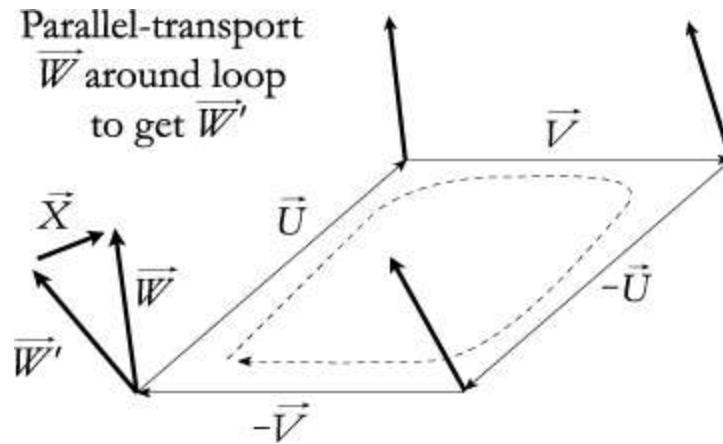
This suggests a way to characterize the existence of curvature. In flat space, parallel transport around a closed loop will always give us the same vector we started with. In a curved manifold, the vector might rotate along the way.

The problem is, there are too many closed loops. Nobody is going to easily write down the ways that vectors change when transported around every conceivable closed path. What we want is to pick out a special set of loops, ones we can easily characterize with just a handful of numbers.

We can address this problem with what is by now our usual trick: to think infinitesimally, and then use calculus to build up finite-sized results if desired. It's for this reason that the study of arbitrary curvatures on manifolds is called **differential geometry**.

Here's how we make a tiny loop to go around. Pick two vectors, $\vec{U}$ and $\vec{V}$, both defined at the same point p . Starting at p , travel an infinitesimal distance in the direction of $\vec{U}$. From there, travel an infinitesimal distance in the direction of $\vec{V}$. (Technically we move a distance that is proportional to the length of $\vec{U}$ and $\vec{V}$ in each case.) Then go backward from our original

move, in the direction opposite to $\vec{U}$, and finally backward again in the direction opposite to $\vec{V}$. We thus return to our original point p , having described a tiny parallelogram along our journey.*



That's a nice way to define a small loop using a relatively compact amount of information: just the components of two vectors at a point. To go from there to a measure of curvature, consider a third vector $\vec{W}$ at the original point. Now let's parallel-transport $\vec{W}$ around our tiny parallelogram, resulting in a new vector $\vec{W}'$. On a flat manifold, the vector won't change, and we will have $\vec{W}' = \vec{W}$. But on a curved manifold it might have shifted, if only a little bit. We can define the difference to be yet another vector:

$$\vec{X} = \vec{W} - \vec{W}'. \quad (7.20)$$

That's how we specify curvature at any point on an arbitrary manifold. Use two vectors to define a loop, parallel-transport a third vector around the loop, and a fourth vector representing the change in the third will be a measure of how curved the space is. If it's nearly flat, $\vec{X}$ will be small; in a highly curved space, $\vec{X}$ will be relatively large.

What we have, in other words, is a map from a collection of three vectors $(\vec{U}, \vec{V}, \vec{W})$ to a fourth vector, $\vec{X}$. But we already have a name for

maps between collections of vectors: They are tensors. So what we really have is the **Riemann curvature tensor**; it inputs two vectors to define a loop and a third vector to be transported, and outputs a fourth vector to characterize the change around the loop.



It might still seem a bit cumbersome to ask what happens to every single vector that loops around every single parallelogram defined by two other vectors. That's where the magic of components comes to save us. Think of each of our vectors in terms of components, so that we represent $\vec{U}$ by a set of components U^i , and likewise for the other vectors. The number of components for each vector equals the dimensionality of the manifold we are in.

Then, just as the information about the line element can be encoded in the components g_{ij} of the metric tensor, the Riemann curvature tensor can also be encoded in a set of components, written R^i_{jkl} . (The order of the indices matters, as does whether they are up or down.) This gives us an explicit way of representing the map from $(\vec{U}, \vec{V}, \vec{W})$ to $\vec{X}$, using components:

$$X^i = R^i_{jkl} W^j U^k V^l. \quad (7.21)$$

Note the Einstein summation convention in action. On the right-hand side we are summing over all the values of the repeated indices j , k , and l .

Admittedly, there are a lot of components in R^i_{jkl} . Four indices, each of which takes on d values in a d -dimensional manifold, leaving us d^4

components in total. That's 81 components in three dimensions, 256 components in four dimensions, and the number goes up rapidly from there.

Fortunately there are symmetries of the Riemann tensor that make life just a bit easier for professional general-relativists. Different components are related to one another in simple ways; for example, switching the last two indices gives the same number but with a minus sign: in $R^i_{jkl} = -R^i_{jlk}$. Thanks to this and other relations, the total number of independent components in d dimensions works out to be $\frac{1}{12}d^2(d^2-1)$. In four dimensions that's twenty independent components—considerable, but manageable. In two dimensions it's just one component. That means that in a two-dimensional manifold, there is simply a number at every point characterizing how curved the surface is (positively or negatively, as we know). In one dimension there are zero independent components! We think we can draw a one-dimensional curve that looks curved, but that's once again our extrinsic perspective fooling us. Inside a one-dimensional world, there would be no such thing as curvature.

The curvature depends on the metric in a well-defined way, but the dependence is complicated, so we have once again reserved the gritty details for [Appendix B](#). What matters is that you understand the conceptual basis for what we've done: defining a metric, then parallel transport and geodesics, then curvature. Those will be the mathematical tools necessary to make sense of Einstein's general relativity.

* From popular discussions, one might get the impression that there is a kind of hierarchy from a “hypothesis” (which is little more than a guess), up through “model” and “theory,” and ultimately to “law,” where the ideas are listed in increasing order of certainty. In the usage of real scientists, however, there is considerable overlap, to the point where there's no useful distinction between any of these terms. There is a crucial and well-recognized difference, on the other hand, between “theory,” which is a scientific model of how the world works, and “theorem,” which is a rigorously proven mathematical result.

- * We're using "matrix" in the mathematical sense of "an array of quantities." Nothing to do with whether or not we are living in a computer simulation.
- * The metric and other tensors we will care about can have different values at each point in space (or spacetime, when we get to that). So what we're really dealing with are tensor fields. A "scalar field" is just a function, taking on a numerical value at each point; we also have "vector fields" and other tensor fields.
- * If you're worried that curvature will lead us to slightly miss coming exactly back to our starting point, you are correct. But if our parallelogram is sufficiently small, the mismatch is negligible compared to the quantities we care about here.

EIGHT

GRAVITY

Classical mechanics, despite whatever impression you may have received over the previous chapters, is not a theory of physics. Rather, it's a *framework* within which honest theories can be constructed. Classical mechanics says, "A physical system is described by positions and momenta or appropriate generalizations thereof, and those variables obey equations given (equivalently) by Newton's $\vec{F} = m\vec{a}$ or Hamilton's equations or the principle of least action." It remains agnostic about what the forces are, what the specific Hamiltonian is, or what the action is. Newtonian gravity, by contrast, is a specific theory; it gives precise rules for what the forces are (the inverse-square law) from which definite predictions can be made. There are many specific theories under the broad umbrella framework of classical mechanics.

Quantum mechanics is an alternative framework to classical mechanics; there is a specific theory of the classical simple harmonic oscillator, and a separate theory of the quantum simple harmonic oscillator, for example. Almost all theories that modern physicists think about fall within either the "classical" or "quantum" frameworks.

Relativity is also a framework, not a theory. Specific theories can be "non-relativistic" (like Newtonian gravity) or "relativistic" (like Maxwell's theory of electromagnetism). The distinction comes down to how we think about spacetime: Non-relativistic theories feature absolute space and time and instantaneous action at a distance, while relativistic theories have light cones and a firm speed limit. The categories of non-relativistic/relativistic

crosscut the categories of classical/quantum; there are models that fit in any of the corresponding categories.

	Classical	Quantum
Non-Relativistic	Newtonian Gravity	Quantum Harmonic Oscillator
Relativistic	Maxwell's Electromagnetism	Quantum Electrodynamics

It often happens in physics that we develop an understanding of some phenomenon in either a classical or non-relativistic context and then need to do a little work to construct an analogous understanding in the quantum and/or relativistic picture.

The ideas of relativity were largely inspired by features of Maxwell's electromagnetism, which remains the paradigmatic classical relativistic theory. But once relativity was in place, it was natural to turn to other forces of nature and ask how they could fit into the new framework. The obvious example to consider was gravity, which Newton had so successfully described right at the birth of non-relativistic classical mechanics.

Finding a successful relativistic theory of gravity turned out to be harder than anyone anticipated. It took a decade between Einstein's papers on special relativity in 1905 and his final formulation of general relativity in 1915. He wasn't the only one working on the problem; Finnish physicist Gunnar Nordström developed a competing theory, and he and Einstein corresponded as they worked. But Einstein's unmatched physical insight and gift for thought-experiment reasoning eventually won the day. His contributions to special relativity were enormously important, and it was his foundational work on quantum mechanics (also in 1905) that won him the Nobel Prize, but Einstein's proposal of general relativity as a theory of curved space-time was what made him the most celebrated scientist of the twentieth century.

INERTIAL AND GRAVITATIONAL MASS

Mass and gravity have a special relationship. Newton's second law says that the force acting on a body equals its mass times the acceleration it undergoes. Meanwhile, Newton's inverse-square law of gravity says that the gravitational force between two objects is proportional to the mass of each of them, and also to the inverse of the distance squared.

The idea of “mass” appears in both relations. But the role being played by that idea is completely separate in the two cases. In the second law, mass is a measure of inertia—the resistance that the body has to being accelerated. It's the same quantity no matter what force is causing the acceleration. But in the law of gravity, mass measures the interaction between the body and the specific force of gravity. Why are these two conceptually distinct quantities numerically equal to each other?

To emphasize this, let m be the inertial mass of a body, and M its gravitational mass. The second law is

$$\vec{F} = m\vec{a}, \tag{8.1}$$

while the gravitational inverse-square law for objects labeled 1 and 2 looks like

$$\vec{F} = G \frac{M_1 M_2}{r^2} \vec{e}_r. \tag{8.2}$$

Yet it just so happens that in the real world, the inertial and gravitational masses are equal to each other:

$$m = M. \tag{8.3}$$

There's no obvious reason it had to be that way. Consider the force between two electrically charged particles, given by Coulomb's law. It also takes an inverse-square form, and looks like

$$\vec{F} = K \frac{Q_1 Q_2}{r^2} \vec{e}_r. \quad (8.4)$$

This looks very similar to Newton's law of gravitation, with Coulomb's constant K replacing Newton's constant G , and electrical charges Q_1 and Q_2 replacing the gravitational masses. But there's a crucial difference. Unlike gravity, in electromagnetism the charge that acts as a source for the electric force has nothing at all to do with the inertial mass of the object. It can be positive (as in a proton), negative (as in an electron), or for that matter zero (as in a neutron). Different particles respond to the electromagnetic force differently, and some don't respond to it at all. Whereas every particle responds to gravity, exactly proportional to its mass, and gravity is always attractive.

Newton's theory of gravity doesn't attempt to explain why the mass that is the source of gravity is the same as the mass that governs inertia and motion. We just take it as a fact about the universe and move on.

THE PRINCIPLE OF EQUIVALENCE

The equivalence of inertial mass and gravitational mass has a provocative consequence. Consider two particles pulling on each other via gravity, and let's think about what happens to particle 2 under the influence of particle 1. Combining (8.1) and (8.2), we have

$$\vec{F} = m_2 \vec{a} = G \frac{M_1 M_2}{r^2} \vec{e}_r. \quad (8.5)$$

But $m_2 = M_2$, so those quantities cancel out, leaving:

$$\vec{a} = G \frac{M_1}{r^2} \vec{e}_r.$$

This is a formula for the acceleration felt by particle 2, which turns out to be completely independent of particle 2's mass. In other words, every object accelerates in the same way in a gravitational field, regardless of its mass (or anything else).

That's interesting. It certainly doesn't hold for other forces, like electromagnetism. In a given electric field, a positively charged particle will be pushed in one direction and a negatively charged one in the opposite direction. Gravity, by contrast, pushes everything in the same direction, and at the same rate. This insight predates Newton's equations, going all the way back to Galileo.

Einstein's breakthrough was to take this feature of gravity—all particles fall at the same rate in a gravitational field—and extend it to a general principle. In [Chapter 3](#) we noted that if you were in a sealed rocket ship, you could tell if you're accelerating or not accelerating, but there is no way to gauge your absolute velocity. Now, let's instead compare a rocket sitting motionless on the ground to one that is accelerating through space at one g (the acceleration due to gravity at the Earth's surface).



In the accelerating rocket, if you let go of an object, it appears to fall to the floor, due to the rocket's motion. All objects will fall in an identical fashion, since it's really the rocket that is to blame. But because of the equality of inertial and gravitational mass, the same thing happens in the rocket stationary on the ground. Any dropped objects will fall at the same rate, regardless of their mass.

This led Einstein to propose the **principle of equivalence**: In small regions of spacetime, the effects of gravitation are equivalent to those of being in an accelerating frame of reference. It's not just a matter of dropping objects to see how they fall; you can't do any experiment at all from inside your enclosed spaceship that would tell you whether you are accelerating through space or sitting peacefully on the ground. In operational terms: in small regions of spacetime, the laws of physics reduce to those of (non-gravitational) special relativity.

When we consider larger regions of spacetime, this clearly doesn't work. The gravitational field can pull in different directions depending on where you are located, whereas an accelerated frame will always lead to uniform motion for anything inside it. Near the Earth, for example, the gravitational force will always point toward the planet's center. If your spaceship were of a similar size to the Earth, you might notice that; widely separated pendulums would point in different directions. So the restriction of the principle of equivalence to small regions of spacetime is crucial.



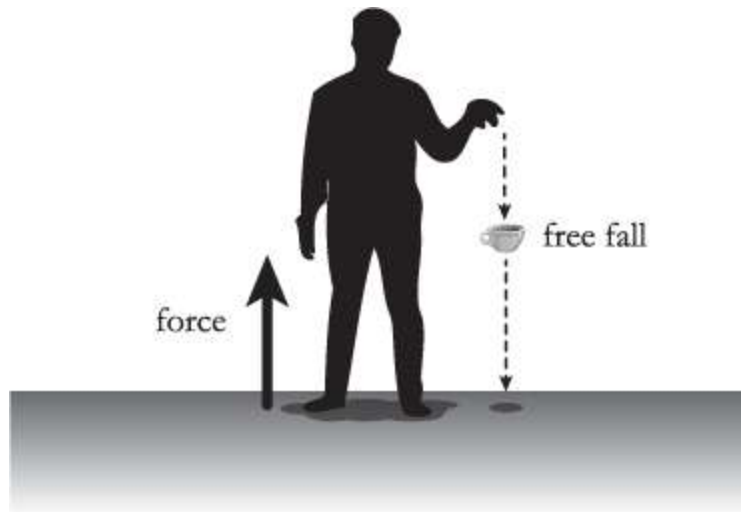
You or I, having hit upon this insight, might be proud of ourselves and call it a day. Einstein, being Einstein, took it a step further. The fact that “physics looks like special relativity in small regions of space-time” sounds suspiciously like something we’ve heard before. Just last chapter, in fact: Bernhard Riemann realized that the way to think about curved manifolds was to posit that “geometry looks Euclidean in small regions of space.” So, Einstein reasoned, maybe we shouldn’t think of gravity as a “force” living inside spacetime at all. Maybe we should think of it as a feature of spacetime itself: the curvature.

FREE FALL

Seems preposterous, doesn’t it? Of course gravity is a force! Apples fall from trees, clumsy people fall down stairs, the Earth orbits the sun. How can we make sense of gravity other than to think of it as a force?

To be honest, you are still allowed to think of gravity as a force when it makes sense to do so—particle physicists like to talk about the four forces of nature, and they include gravity alongside electro-magnetism and the strong and weak nuclear forces. But gravity is a different kind of force, precisely because it is universal. Gravity affects everything in the same way, unlike other forces that affect objects differently depending on their charges. That’s what permits us to shift from thinking of a force propagating within spacetime to a property of spacetime itself.

Einstein’s view demands a change of perspective. Say you drop a coffee cup and it falls to the floor. It’s tempting to say, “the force of gravity pulled it down.” But according to general relativity, the unforced motion of things is to be in free fall. The coffee cup is just doing its natural thing. It’s you, standing on the ground, who are experiencing a force: The Earth is pushing upward on your shoes, deflecting you from a free-fall trajectory. It’s the same set of events, just portrayed in a different way.



In special relativity, objects that don't feel forces move in straight lines. We know what the generalization of a straight line is to a curved manifold: It's a geodesic. According to general relativity, spacetime is curved, and unaccelerated objects move along geodesics of that curved manifold.

You might object that the Earth moves around the sun in something close to an ellipse, which is nobody's idea of a straight line. That's because you're still stuck thinking in space, rather than spacetime. In the sun's frame of rest, the Earth mostly moves in a timelike direction, since its motion through space is so slow (about 0.0001 times the speed of light). But the gravitational influence of the sun causes the spacetime around it to be gently curved, so that a geodesic around it looks like an ellipse in space. The Earth is simply doing its best to move in a straight line, just like the coffee cup.

THE SPACETIME METRIC

In [Chapter 6](#) we talked about Minkowski spacetime and how the formulas for proper time and the length of spacelike curves look somewhat like Pythagoras's theorem, but with a funny minus sign. In [Chapter 7](#) we talked about Riemannian geometry and how the fundamental idea is that of the metric tensor, which gives us a line element from which we can calculate the lengths of curves. These are closely related. Relativity is built on the idea that spacetime has a particular kind of metric, one with a minus sign

for the timelike direction. A metric with this kind of minus sign is called **Lorentzian**, and if spacetime is perfectly flat we have the **Minkowski metric**.

Recall that there is a cute trick for indexing dimensions of space-time, where we use Greek indices for all four spacetime dimensions (x^μ), then subdivide that into zero for time ($x^0 = t$) and Latin indices for space ($x^i = x^1, x^2, x^3$). With that notation, the Minkowski metric takes the form

$$g_{\mu\nu} = \begin{pmatrix} g_{00} & g_{01} & g_{02} & g_{03} \\ g_{10} & g_{11} & g_{12} & g_{13} \\ g_{20} & g_{21} & g_{22} & g_{23} \\ g_{30} & g_{31} & g_{32} & g_{33} \end{pmatrix} = \begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & +1 & 0 & 0 \\ 0 & 0 & +1 & 0 \\ 0 & 0 & 0 & +1 \end{pmatrix}. \quad (8.7)$$

In line-element form, this is equivalent to

$$ds^2 = -dt^2 + dx^2 + dy^2 + dz^2. \quad (8.8)$$

The minus sign leads to some awkwardness, but you learn to deal with it. The way we've written it, the length of a spacelike curve can be read off directly from the metric, which we essentially did back in equation (6.10). But for timelike curves—you know, the ones real objects move on—the spacetime interval ds^2 will be negative, so $ds = \sqrt{ds^2}$ appears to be imaginary, which is weird. That's okay; for timelike curves we simply deal instead with the proper time, which is defined by

$$d\tau^2 = -ds^2. \quad (8.9)$$

Alternatively you could simply multiply the entire right-hand side of (8.8) by -1 , and define the line element to be minus what we've chosen it to be.

Then the line element gives you the proper time directly and you have to multiply it by -1 when calculating spacelike distances. That's a respectable thing to do, it's just a choice of convention, and numerous textbooks work that way. (As a rough guide, physicists who specialize in relativity mostly use the $-+++$ convention we've chosen here, while particle physicists often go with $+- - -$.) Our choice is convenient if you occasionally like to think of "space at one moment in time," which inherits a nice Euclidean $+++$ metric this way.

If you wanted to boil special relativity down to a single compact sentence, it would be "spacetime has a Minkowski metric." The equations (8.7) and (8.8) contain all the information you need to talk about distances, times, light cones, space travel by twins or other adventurers, and more.

Einstein's insight was that the actual spacetime of our universe looks like Minkowski spacetime in small regions, but that the fabric as a whole is sewn together in such a way as to lead to curvature, as Riemann imagined. The entire geometry will be described by some kind of metric, but it won't be as simple as (8.7). Figuring out what the spacetime metric is and what influence it has on stuff in the universe is how professional general-relativists spend most of their working hours.

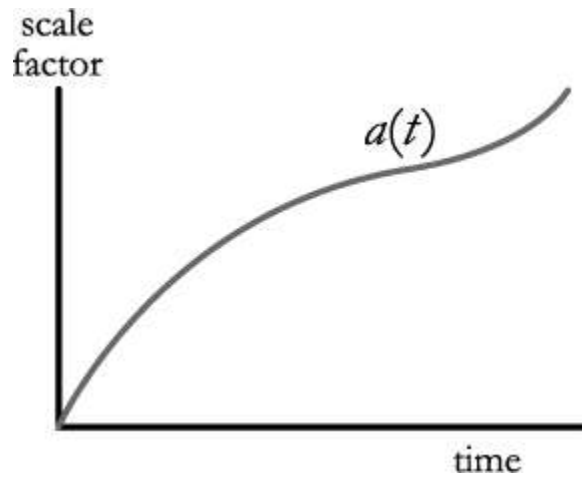
Let's look at a simple metric that is just a bit different from Minkowski. Here is the metric for an expanding universe:

$$g_{\mu\nu} = \begin{pmatrix} -1 & & & \\ & a^2(t) & & \\ & & a^2(t) & \\ & & & a^2(t) \end{pmatrix}. \quad (8.10)$$

If a metric component is zero, we just leave it blank, trusting you to fill it in mentally if necessary. In line element form this is:

$$ds^2 = -dt^2 + a^2(t) \left[dx^2 + dy^2 + dz^2 \right]. \quad (8.11)$$

The function $a(t)$ is called the **scale factor**. If we think physically about what's going on, we see that time is ticking away completely normally. We know that because the g_{00} component of the metric, the coefficient of dt^2 , is -1 just like in Minkowski space. But the spatial parts are multiplied by the scale factor. If two objects, like galaxies, are located at fixed spatial coordinates, the distance between them will grow as $a(t)$ increases. Just like that, we have a mathematical description of expanding space.



Thinking about general relativity often proceeds in the following way: We decide that we want to model a physical situation with given properties. For example, we might imagine that we have a universe uniformly filled with a smooth distribution of matter, rather than an inhomogeneous, lumpy configuration. Since the matter (which curves spacetime) is uniform through space, we can infer that the metric won't depend on spatial locations x^i , only on t . Furthermore, let's say that space (not spacetime) has a flat Euclidean geometry, rather than being positively or negatively curved. Those requirements lead us essentially uniquely to a metric of the form (8.10). But they don't tell us how the scale factor $a(t)$ behaves. That will depend on how much matter and other stuff there is in the universe. Clearly

we need an equation that relates the metric to matter and energy. That's exactly what Einstein came up with.

THE ENERGY-MOMENTUM TENSOR

In mathematics, we write down axioms and rigorously derive theorems from them. In science, on the other hand, we basically guess—or “hypothesize,” if you want to sound erudite—laws of physics, and then test them for both internal consistency and fit to experimental data. Einstein's task was to guess the equation that governs the behavior of the spacetime metric.

In Newtonian gravity, the force is proportional to the mass of the object causing the gravitational pull. We want a relativistic generalization of that idea. In relativity, “mass” is just one version of energy (it's the energy inherent in an object when it is at rest). And energy is unified with momentum—it's the zeroth component of the four-momentum vector, as we discussed in [Chapter 6](#).

But that discussion was focused on the energy and momentum of a single object, which could be idealized as a point. We won't always be so fortunate. Sometimes we're going to want to consider sources of matter and energy that are spread throughout space, like the interior of a star or the distribution of dark matter around a galaxy. In relativity, such an extended distribution of matter is called a **fluid**. It's not a great term, since we often consider examples that aren't fluidlike at all. The interior of a planet is called a fluid, even if it's perfectly solid. A collection of photons moving in random directions is a fluid. To a general-relativist, “fluid” is any form of matter that is extended through space, rather than being concentrated at a point.

For a fluid, rather than thinking about the mass or energy, we can think of the **energy density**, usually written ρ (the Greek letter rho), the amount of energy per cubic centimeter (or whatever units you like to use). The energy density can vary across space and time, so in general it will be a function of x^μ . For a localized object like a star or planet, the total energy will just be the integral of the energy density over space.

But fluids are characterized by more than just the energy density at each point. There can also be **pressure**, which can be thought of as the amount of force the fluid would exert on the walls of a container. (Even if it's not literally confined in a container, we can think about the force it would exert if it were.) A fluid can be moving in complicated ways—think of currents in air or water—so in general there will be a velocity vector associated with the fluid at each point. And there can be other kinds of stresses and strains if the object is being twisted or deformed from its equilibrium shape. Like the energy density, all of these quantities will in general depend on what spacetime point we're looking at.

In relativity, all of these ideas are bundled up into the **energy-momentum tensor** (also known as the **stress-energy tensor**), usually written $T_{\mu\nu}$. The energy-momentum tensor summarizes everything we want to know about the mass, energy, momentum, pressure, stress, and other energylike features of a collection of matter (or radiation, or anything else).

In general, as you might imagine, an expression for $T_{\mu\nu}$ in terms of more familiar quantities will look fearsomely complicated. But we can get some intuition by considering the simple case of a **perfect fluid**: a fluid that looks the same in every direction in its rest frame. Then the only quantities we need to specify the energy-momentum tensor of that fluid are the energy density ρ and the pressure p . In flat spacetime, in the rest frame of the perfect fluid, the energy-momentum tensor looks like

$$T_{\mu\nu} = \begin{pmatrix} \rho & & & \\ & p & & \\ & & p & \\ & & & p \end{pmatrix}.$$

(8.12)

The 00 component is the energy density, and the diagonal spatial components are equal to the pressure. For non-perfect fluids or in non-rest frames, things get crazy; the pressure could be different in different directions, and there could be off-diagonal terms resulting from stress and

strain. But we're already taxing our brains enough here, so it's okay to stick to the simple form (8.12). Both ρ and p can be functions of x^μ , so this expression can carry a lot of information. Perfect fluids are able to describe planets, stars, or dark matter and dark energy filling space.

EINSTEIN'S EQUATION

To generalize Newtonian gravity to the relativistic context, therefore, we want to invent an equation that relates the spacetime metric to the energy-momentum tensor. This is an extension of the unification we saw when we related the energy of a particle to its momentum. In general relativity, gravity isn't created just by mass, it's created by all different kinds of energy, pressure, stress, and so on.

So how do we do that? Both $g_{\mu\nu}$ and $T_{\mu\nu}$ are tensors with two lower indices, and as a bonus they are both symmetric ($g_{\mu\nu} = g_{\nu\mu}$ and $T_{\mu\nu} = T_{\nu\mu}$). So as a first guess, let's imagine they are proportional to each other:

$$g_{\mu\nu} = \alpha T_{\mu\nu}, \tag{8.13}$$

where α is a constant of proportionality. Whenever you have an equation involving tensors, both sides need to have the same free indices in every term, otherwise you're not equating the same form of tensor.

This is a pretty silly guess, but we're trying to let you in on the kind of thing that would flicker across the mind of a theoretical physicist, even if for just a millisecond before being discarded. We immediately know it can't be right, because in empty space we should have $T_{\mu\nu} = 0$ (shorthand for 0s in every component slot), but we certainly don't want to have $g_{\mu\nu} = 0$. We want our equation to give us the Minkowski metric in empty space, or more specifically in situations where there is no gravity.

Let's use our brains a bit. Although (8.13) looks mathematically legitimate—it equates two symmetric two-index tensors—it doesn't make physical sense. Intuitively that equation would imply that energy-momentum is somehow *creating* the metric. That's not what we want at all.

We want energy-momentum to *bend* the metric—not to create spacetime, but to curve spacetime. If there are no sources ($T_{\mu\nu} = 0$), spacetime can be flat, but if we stick a planet or star in there, spacetime must bend.*

If we think about it, what we really want is for the energy-momentum tensor to act as a source for *derivatives* of the metric, not the metric itself. Nonzero derivatives are the way we characterize bending. Back in [Chapter 4](#) we mentioned how Laplace introduced the gravitational potential field as a way of thinking about Newtonian gravity. In that context the gravitational force depends on the derivative of the potential, not on the potential itself. In our new relativistic context, we should think of the metric tensor as roughly analogous to the gravitational potential, whose derivatives give us the force, rather than the gravitational force itself.

So we’re looking for a quantity that is a symmetric tensor with two lower indices (so we can set it proportional to $T_{\mu\nu}$) that we make out of the metric and derivatives thereof.

$$\left(\begin{array}{c} \text{symmetric tensor} \\ \text{constructed from} \\ \text{the metric and} \\ \text{its derivatives} \end{array} \right)_{\mu\nu} = \alpha T_{\mu\nu}. \quad (8.14)$$

We almost have such a thing already in our possession. The Riemann curvature tensor $R^\lambda_{\sigma\mu\nu}$ (where now we’re using Greek indices because we’re in spacetime) is a tensor constructed from derivatives of the metric. The only problem is that it has too many indices. But there’s another tensor, the **Ricci tensor**, that we can construct just by summing over the first and third indices of the Riemann tensor. The Ricci tensor is named after Italian mathematician Gregorio Ricci-Curbastro, who also invented the basics of tensor calculus and much of the apparatus of modern Riemannian geometry. On an influential review article, a 1900 paper with his former student Tullio Levi-Civita that Einstein would use to learn about tensors, for some unknown reason he signed his name “G. Ricci,” without the “-Curbastro.”

All of his other papers included his full name; this was the only exception. Maybe he suspected that the tensor he would introduce would merit a short and memorable name.

Using Einstein summation convention, the Ricci tensor is

$$R_{\mu\nu} = R^{\lambda}{}_{\mu\lambda\nu} = R^0{}_{\mu 0\nu} + R^1{}_{\mu 1\nu} + R^2{}_{\mu 2\nu} + R^3{}_{\mu 3\nu}. \quad (8.15)$$

We've changed around our Greek letters, but that's okay; they're just arbitrary index labels, after all. As long as our label choice is consistent (the same collection of free indices) throughout an equation, we should be fine. The Ricci tensor is also symmetric, $R_{\mu\nu} = R_{\nu\mu}$.

It sure seems like we are very close to the goal. We should obviously posit an equation of the form

$$R_{\mu\nu} = \alpha T_{\mu\nu}, \quad (8.16)$$

where α is again a constant of proportionality. This is a much more reasonable hypothesis than (8.13) was. It's of the general form (8.14), setting a symmetric two-index tensor constructed from the metric and its derivatives equal to the energy-momentum tensor. And in empty space, when $T_{\mu\nu} = 0$, it predicts that $R_{\mu\nu} = 0$, which is certainly consistent with flat Minkowski space (in which all components of the Riemann tensor vanish, so the Ricci tensor surely does).

It's so reasonable, in fact, that Einstein himself put forward this equation as a possible foundation for general relativity in October 1915. And it almost works, but not quite.

The problem is that we know something about energy: It's conserved. The question of conservation of energy in general relativity is a subtle one because energy can be transferred back and forth between matter and the curvature of spacetime. But once we take this into account, there is a strong restriction on how the energy-momentum tensor can change over time. And this restriction is not obeyed by the Ricci tensor. So if (8.16) were the

correct equation, either energy isn't conserved at all, or almost no spacetime metrics would actually solve the equation.

Happily, there is an easy fix. Sadly, the details require a bit more digging into the nitty-gritty of tensors and curvature, which we have relegated to [Appendix B](#). The essential trick is that we can define an **inverse metric**, $g^{\mu\nu}$, which is related to the metric but has upper rather than lower indices. (If you know about matrices, it is literally the matrix inverse of the metric.) Using the inverse metric we can define a function of spacetime, the Ricci curvature scalar, via

$$R = g^{\mu\nu} R_{\mu\nu}. \quad (8.17)$$

This has no free indices at all, since we've summed over both μ and ν on the right-hand side. But we can multiply it by the metric $g_{\mu\nu}$ to obtain a separate symmetric two-index tensor constructed from the metric and its derivatives. Then, if you are Einstein scribbling feverishly in November 1915, you can try to figure out a combination of $R_{\mu\nu}$ and $Rg_{\mu\nu}$ that has the right properties to be proportional to $T_{\mu\nu}$ without violating conservation of energy. There is a uniquely right answer, which we nowadays call **Einstein's equation**:

$$R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} = 8\pi G T_{\mu\nu}. \quad (8.18)$$

The combination on the left-hand side is the **Einstein tensor**. We could invent a new symbol for it, but it's simple enough to express it this way, as a combination of the Ricci tensor and curvature scalar. This is the final form of the field equation for general relativity, presented by Einstein in a lecture to the Prussian Academy of Sciences on November 25, 1915.*

General relativity was summarized by physicist John Wheeler as “spacetime tells matter how to move; matter tells spacetime how to curve.” The first half of that maxim is enacted by the idea that free particles move on geodesics, and non-free particles (ones subject to a force other than

gravity) deviate from geodesic motion in much the same way that non-free particles accelerate away from straight lines in Newtonian mechanics. The second half is enacted by Einstein's equation, which we can solve to tell us what the spacetime metric will be in any situation of interest. This equation has ended up correctly predicting the evolution of the universe, the existence of black holes, the propagation of gravitational waves, and other phenomena that Einstein had no inkling of at the time. That's the power of a good scientific theory: It knows much more than the people who first write it down do.

The way we've written Einstein's equation doesn't include some undetermined constant of proportionality, but rather the specific factor $8\pi G$, where G is the same constant that appears in Newton's law of gravitation. You can't derive that value by pure thought, or even by seeking consistency with other cherished principles like energy conservation; you have to appeal to experimental data. What Einstein did was to consider the "weak-field limit," in which gravity is weak and spacetime is almost flat but not quite. In those circumstances we know that a good theory of gravity had better reproduce Newton's inverse-square law, and in order to make that work out, the constant in Einstein's equation (8.18) must be $8\pi G$. What's amazing is that this equation, with its numerical constant set by measuring apples falling from trees and the motions of planets in the solar system, makes predictions for what happens in the first minutes after the Big Bang, and passes with flying colors.

ACTION PRINCIPLE

Back in [Chapters 3](#) and [4](#) we saw how there are ways of formulating classical physics that look different, but are mathematically equivalent: Newtonian mechanics, Lagrangian mechanics, and Hamiltonian mechanics. General relativity is a classical theory, so we should not be surprised that it can be derived in multiple equivalent ways. Let's look at the Lagrangian route via the principle of least action; this turns out to be an especially convenient way of thinking about relativistic theories, as it is naturally suited to treating space and time on an equal footing.

In our original look at the action principle, we started with a particle described by a position x and a velocity $v = dx/dt$. We defined a Lagrangian

L as a function of x and v , in particular as the kinetic energy minus the potential energy. The action is the integral of the Lagrangian over time,

$$S = \int L\left(x, \frac{dx}{dt}\right) dt. \quad (8.19)$$

The actual path taken by a real particle is the one that minimizes this action compared to other paths between the same starting and ending points.

Now we have a somewhat different situation. Rather than a particle with a location in space, we are interested in the dynamics of the metric tensor. General relativity is an example of a **field theory**, since the metric tensor $g_{\mu\nu}(t, x^i)$ is a field that has a value at each point in space-time, rather than a particle that has a location somewhere. In a field theory, we define the Lagrangian by constructing a function called the **Lagrange density** $\mathcal{L}$, then integrating that over all of space:

$$L(t) = \int \mathcal{L}(t, x^i) d^3x. \quad (8.20)$$

The notation $d^3x = dx^1 dx^2 dx^3$ indicates that we are integrating over all three dimensions of space. When you integrate a function of space-time (the Lagrange density) over space, you end up with just a function of time (the Lagrangian itself). The action is the integral of L over time, which is just the integral of $\mathcal{L}$ over spacetime:

$$S = \int L dt = \int \mathcal{L} d^4x. \quad (8.21)$$

We've already figured out Einstein's equation, but let's imagine we hadn't, and we were trying to find it using the principle of least action. Our task is clear: We need to guess the appropriate Lagrange density $\mathcal{L}$. It

should be constructed from the metric and its derivatives, just as the Lagrange density for a particle is constructed from position and its derivatives (in particular, the velocity). But the good news is that we are trying to guess a scalar function—a tensor with zero indices, if you like—rather than guessing a two-index tensor to put on the left-hand side of (8.14). There are fewer ways to have zero indices on a tensor than two indices, which makes our life considerably easier.

In fact there is essentially one possibility: the Ricci curvature scalar R . That is the obvious thing to guess for the Lagrange density for the metric, $\mathcal{L}_{\text{gravity}} = R$, because there’s basically no other choice available. We should also include a Lagrange density for matter, but we don’t have to be explicit about that; it will depend on what kind of matter we’re interested in. And we need to put Newton’s constant G in there somewhere to get the strength of gravity to work out correctly. The final answer turns out to be

$$S = \int \left(\frac{1}{16\pi G} R + \mathcal{L}_{\text{matter}} \right) \widehat{d^4 x}. \quad (8.22)$$

That’s it! This is the action that, when we look for spacetime metrics that minimize it, says that they will obey Einstein’s equation (8.18). There is one detail we have suppressed for simplicity, namely, that the “volume element” in the integral is altered a bit in curved spacetime, so we’ve written it as $\widehat{d^4 x}$ rather than simply $d^4 x$ as a reminder.*

The beauty of the action formalism should be evident: It was way easier to guess the right scalar Lagrange density than it was to guess the right tensor for Einstein’s equation, and cherished principles like energy conservation pop out automatically rather than lingering as things we have to worry about and verify. Of course, you do have to be pretty mathematically agile to figure out that you should be thinking about the action principle in the first place, and then to chug through the manipulations (which we have wisely avoided here) to actually derive Einstein’s equation from the action.

Einstein himself was pretty mathematically agile, but not as much as his colleague David Hilbert, who was one of the great mathematicians of the early twentieth century. (“Hilbert space” appears as a crucial concept in quantum mechanics.) In the summer of 1915, when Einstein was closing in on the final form of general relativity but wasn’t quite there yet, Hilbert invited him to give a series of lectures at the University of Göttingen. The two talked at great length about curved spacetime, and Einstein even stayed at Hilbert’s house. They continued an extensive correspondence after Einstein returned to Berlin. And in the end, they both derived equation (8.18) almost simultaneously, Einstein via the guess- and-revise method, and Hilbert through the slick action formalism.

It’s a matter of scholarly dispute whether Hilbert actually derived the complete field equation a few days before Einstein did, and how much useful input Einstein received from Hilbert’s correspondence; there are missing letters, papers being updated during the editing process, and the usual messy minutiae of history. What’s clear is that it was Einstein who came up with the basic insight of thinking of gravitation in terms of the curvature of spacetime, and who first presented the final equation in public, based on sensible physical criteria. Physicists therefore refer to (8.18) as “Einstein’s equation,” and (8.22) as “the

Einstein-Hilbert action.” That’s a relatively accurate correspondence between labels and proper historical credit, which scientists don’t always achieve.

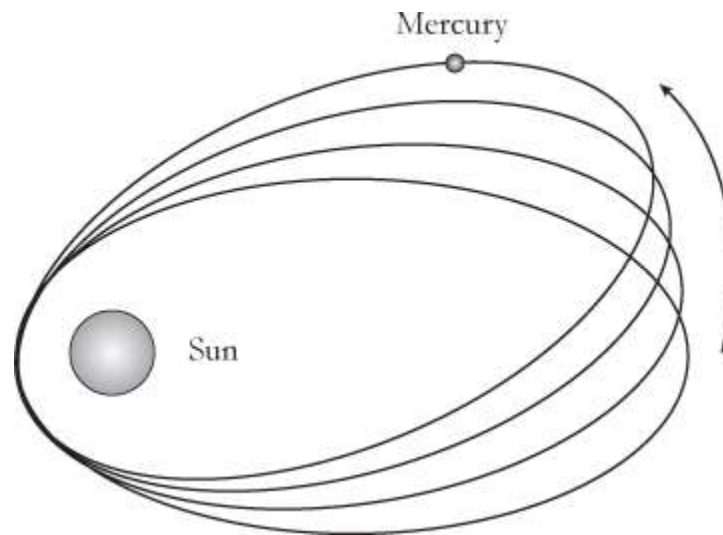
EMPIRICAL CONSEQUENCES

Unlike most physical theories, the development of general relativity was not driven primarily by a need to explain some puzzling experimental anomaly but by the search for theoretical consistency. Einstein had in mind some features of how gravity worked, such as the inverse-square law and the principle of equivalence, and he was pretty familiar with the basic structure of relativity. It was a matter of reconciling these theoretical demands with each other, which he eventually accomplished by positing that gravity is a manifestation of the curvature of spacetime.

But once that was done, and the field equation derived, it was time to turn back to the empirical: to make experimental predictions and go out and

test them.

One testing ground was the **precession of Mercury's orbit**, which was a little bit of a cheat, since the observational situation was already well-known. Kepler posited that planets move in perfect ellipses, and Newton put forward a theory in which that happens naturally if there is a single planet moving undisturbed around a perfectly spherical sun. In the real world, gentle tugs from the gravitational fields of the other planets cause orbits to precess a little bit, slowly shifting the direction along which the axis of the ellipse is oriented. Plugging in numbers, the orbit of Mercury is predicted by Newtonian gravity to precess by 0.148 degrees per century.

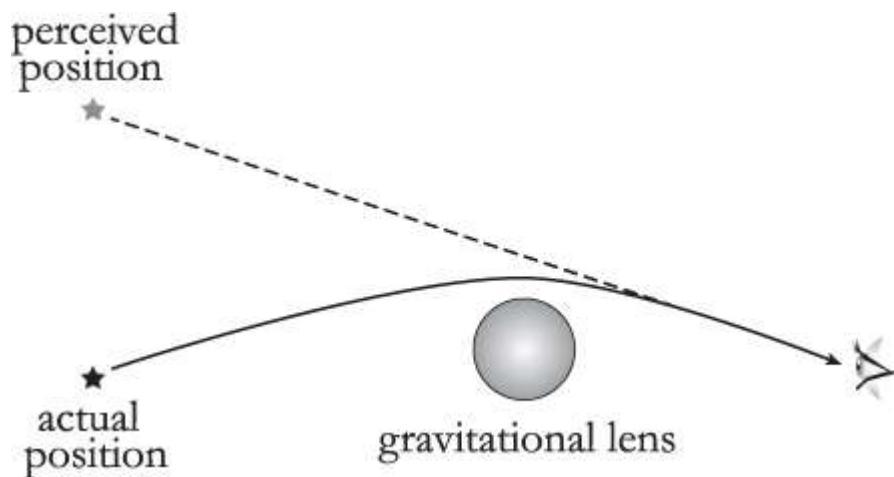


By the late 1800s, astronomers had measured the precession of Mercury and found 0.160 degrees per century. That's a discrepancy of 0.012 degrees/century—small, but large enough that it shouldn't be a random error. Urbain Le Verrier, a French astronomer who had proposed the existence of the planet Neptune to help explain the similarly anomalous orbit of Uranus, tried to repeat his success by suggesting a new planet orbiting inside Mercury. The hypothetical inner planet even got a name: Vulcan. Several teams claimed to have found it, but those claims all evaporated under closer scrutiny.

General relativity, Einstein realized, does a pretty good job at recovering the predictions of Newtonian gravity, but the match is not exact. There are small corrections that become increasingly important in stronger

gravitational fields. We would therefore expect them to matter most, out of all the planets in the solar system, for Mercury, which is closest to the sun. Einstein set out to calculate the additional precession predicted by his theory, and found a result of 0.012 degrees/century, precisely the known discrepancy. One can only imagine Einstein's elation (and relief), after wrestling for years with tensor analysis and other mathematical abstractions, when he realized his theory provided a perfect explanation for a lingering observational anomaly.

It's great to solve a long-standing puzzle, but in science circles it's considered even more impressive if you can predict a phenomenon that hasn't yet been observed, and then go out and verify it. Such was the case for the **deflection of light**, or **gravitational lensing**, which Einstein predicted even before he had derived the full field equation for general relativity. That's possible because it's really a consequence of the principle of equivalence. From the perspective of an accelerating rocket ship, a light ray would appear to bend, just because of the changing motion of the ship. And if it's true for an accelerating rocket ship, it should be true for standing still on the surface of a planet with a gravitational field.



Or, even better, if light passes by the surface of a high-gravity object like the sun. The only problem is that the sun is pretty bright, and it's hard to see stars next to it, which we would have to do in order to measure their positions and determine whether the light from them has been deflected. This conundrum can be solved by waiting for a total solar eclipse, one of

which conveniently took place in 1919. An expedition organized by British astrophysicist Arthur Eddington took photographs of stellar positions near the sun during the eclipse and verified Einstein's prediction of light bending.

It was this empirical result, more than his original theoretical proposal, that made Einstein into an international celebrity. The results of Eddington's observations were front-page news around the world, including *The New York Times*. As part of an elaborate multipart headline, the newspaper proclaimed about general relativity that "Sir Oliver Lodge says it will prevail, and mathematicians will have a terrible time." Not true. Mathematicians were delighted.

As were physicists and astronomers. Today, observations of gravitational lensing have matured into a high-precision science and a crucial instrument in the toolbox of the modern cosmologist. We look at the positions of many galaxies in the deep universe and use the statistical patterns of gravitational lensing to infer the existence of concentrations of matter, much of it "dark matter." General relativity is unambiguous that all forms of energy cause spacetime to be curved, which makes the deflection of light a uniquely useful method for mapping out the distribution of matter throughout space.

After these classic tests that were performed before or soon after the formulation of general relativity, many other phenomena came to be described by the theory: Light climbing away from a gravitating body will lose energy and have its wavelength shifted to larger values, known as the **gravitational redshift**. Matter in motion will cause ripples in the curvature of spacetime that propagate outward at the speed of light, known as **gravitational waves**. Dense collections of matter will collapse under their gravitational pull, creating regions of space from which light itself cannot escape—also known as **black holes**. And the universe itself will not sit still; filled with matter, space must either expand or contract, and in the 1920s Edwin Hubble established the **expansion of the universe**. All impressive implications of general relativity that have now been observed to exquisite precision.

It's a shame that Albert Einstein, who died in 1955, didn't live to witness the remarkable surge in the application of general relativity to important physical problems. During his lifetime, astrophysical observations generally weren't up to the task of investigating situations where relativity comes into

play. Einstein himself never won the Nobel Prize for relativity, nor did Hubble for the expansion of the universe, in part because of a prejudice against astronomical questions.

Times have changed. Here is a complete list of Nobel Prizes that have been awarded for discoveries or phenomena where general relativity plays a central role, as of 2021:

- 1978 (Discovery of cosmic background radiation)
- 1993 (Binary pulsar, indirect evidence for gravitational waves)
- 2006 (Fluctuations and spectrum of cosmic microwave background)
- 2011 (Acceleration of the universe's expansion)
- 2017 (Direct observation of gravitational waves)
- 2019 (Evolution of galaxies and the universe)
- 2020 (Theory and observations of black holes)

As we can see, the pace is accelerating. Long considered an intellectual triumph but not really a central concern of the working physicist, general relativity is increasingly a central topic of exciting contemporary research. One likes to imagine Einstein would be pleased.

* Even with no sources, spacetime might not be flat—there might be gravitational waves passing through empty space, for example. But if spacetime is flat, there can't be any sources.

* There's one other thing you could do: Add a term proportional to the metric itself, $\Lambda g_{\mu\nu}$, where Λ is a constant. Einstein explored that possibility in 1917, calling Λ the **cosmological constant**. Evidence for a nonzero cosmological constant was finally gathered in 1998, when astronomers discovered the acceleration of the universe. But the measured value of Λ is so small that we can usually ignore it unless we're doing cosmology.

* If you must know, the correct volume element is $\widehat{d^4x} = \sqrt{-g} d^4x$, where g is the matrix determinant of the metric tensor.

NINE

BLACK HOLES

Einstein's equation for general relativity packs a wealth of information into a compact package. We can thank the miracle of clever notation. The equation is meant to determine the metric on spacetime, $g_{\mu\nu}(x)$, but it's written in terms of the Ricci tensor, constructed out of the Riemann curvature tensor. Those tensors are defined in terms of the metric, to be sure, but if we were to write out that dependence in all its explicit glory, it would lead to a blizzard of terms that would fill an entire page's worth of mathematical symbols.

Einstein himself was sufficiently impressed, or intimidated, by the complexity of his own equation that he immediately resorted to approximation methods, such as the Newtonian limit, in order to derive experimental predictions. The equation seemed too complicated to be solved exactly, even in simplified situations.

That didn't deter Karl Schwarzschild. An accomplished astronomer and physicist, in 1915 Schwarzschild was serving in the German Army in World War I. He spent time on the French and Russian fronts, calculating missile trajectories. But while on temporary leave he was able to attend one of Einstein's lectures to the Prussian Academy, and he became fascinated by general relativity. After returning to his war duties, in late December 1915 Schwarzschild was able to write Einstein a letter containing the first exact solution to Einstein's equation, describing the metric outside a spherical planet or star. Unfortunately Schwarzschild contracted a rare skin disease at the front, of which he died less than six months later at age forty-two. It took decades for physicists to come to terms with a mind-boggling and

unanticipated implication of his discovery: the prediction of black holes in general relativity.

THE SCHWARZSCHILD SOLUTION

Schwarzschild was looking for the equivalent of Newton's inverse-square law in the solar system. In general relativity, that means finding a solution to Einstein's equation for the metric in the empty space around an isolated spherical body such as the sun. By calculating geodesics of that metric, we learn about planetary orbits, the deflection of light, and other predictions of general relativity. It would be entirely okay to simply present the Schwarzschild solution in all its glory, then to move on to discussing some of its implications. But it's a little more fun to work our way up to it, tracing the basic steps to illustrate how a theoretical physicist would go about tackling a problem like this.

We know that the metric on flat Minkowski spacetime, written in Cartesian coordinates (t, x, y, z) , takes the form

$$g_{\mu\nu} = \begin{pmatrix} g_{tt} & & & \\ & g_{xx} & & \\ & & g_{yy} & \\ & & & g_{zz} \end{pmatrix} = \begin{pmatrix} -1 & & & \\ & +1 & & \\ & & +1 & \\ & & & +1 \end{pmatrix} \quad (9.1)$$

As before we haven't written out the 0s for the off-diagonal elements, but you know they are there.

A curved metric will have some (or perhaps all) of the metric components $g_{\mu\nu}$ be functions of some (or perhaps all) of the coordinates. That sounds like it could get very complicated very quickly. But we are enormously aided by the fact that the physical situation we care about (spacetime outside a spherical body) should itself be spherically symmetric. Operationally, that means we should expect the metric to depend on the

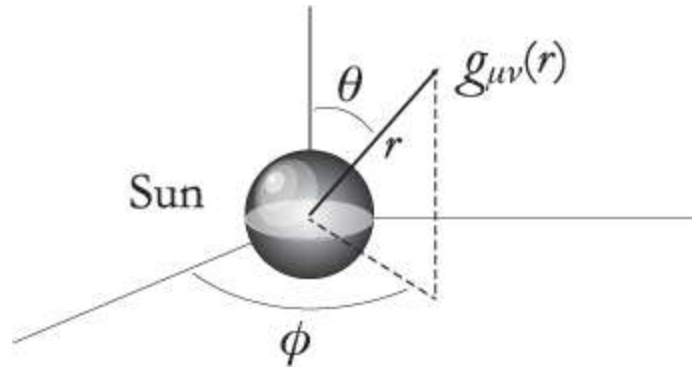
distance from the origin, $r = \sqrt{x^2 + y^2 + z^2}$, rather than on x , y , or z individually.

This suggests a first step: switching the spatial part of our coordinates from Cartesian (x, y, z) to spherical (r, θ, ϕ) . We wrote down the metric for flat Euclidean space in spherical coordinates back in [equation \(7.12\)](#). From that it's straightforward to figure out what the metric on Minkowski spacetime looks like in (t, r, θ, ϕ) coordinates:

$$g_{\mu\nu} = \begin{pmatrix} g_{tt} & & & \\ & g_{rr} & & \\ & & g_{\theta\theta} & \\ & & & g_{\phi\phi} \end{pmatrix} = \begin{pmatrix} -1 & & & \\ & +1 & & \\ & & r^2 & \\ & & & r^2 (\sin\theta)^2 \end{pmatrix}. \quad (9.2)$$

We just took the spatial part of the metric and replaced it with the spherical-coordinates version. To emphasize, this is still the metric on flat Minkowski spacetime, nothing to do with gravity yet. We're just writing it in coordinates chosen to help us work our way toward what the metric outside a gravitating body should look like.

In spherical coordinates, all we need to do is figure out how the metric depends on the radial coordinate r ; the dependence on the angular coordinates (θ, ϕ) is fixed by spherical symmetry. Namely, the metric won't depend on ϕ at all, and it will only depend on θ through a factor of $(\sin\theta)^2$ in the $g_{\phi\phi}$ component in the lower right. And there are more simplifications. One is that we're looking for static solutions: Spacetime is just sitting there, not evolving with time. So the metric components won't depend on t , either. We could also contemplate letting the off-diagonal terms be nonzero, but it's easier to guess something simple first, and in this case that works out for us.



You might be disturbed by all this guessing. Seems unscientific. But when it comes to solving equations, guessing features of the solution is completely legitimate. We're not trying to find every single solution to Einstein's equation, just one particular case. At the end of the day, if our guess leads us to a metric for which we can calculate the Riemann tensor and Ricci tensor and show that it all satisfies Einstein's equation, none of the trickery we used to come up with that metric will matter.

Finally, let's look carefully at (9.2) and think about what the factors of r^2 are really telling us. They are there to reflect the fact that physical distances in the angular directions scale directly with the value of r . Here is a subtlety of general relativity: We're not really choosing coordinates and then solving for the metric. We're doing both things simultaneously. The coordinates don't have any meaning until the metric gives meaning to them, and the metric components make sense only with respect to some specified coordinates.

What this means is that we can simply *define* " r^2 " to be "the quantity that appears in the angular components $g_{\theta\theta}$ and $g_{\phi\phi}$ of the metric tensor." Equivalently, we define r such that the area of a sphere at fixed r is $A = 4\pi r^2$ and its circumference is $C = 2\pi r$. So we don't need to let those components be arbitrary functions and then solve for those functions. We're allowed to simply declare $g_{\theta\theta} = r^2$ and $g_{\phi\phi} = r^2 (\sin \theta)^2$ as already appears in (9.2), taking that as fixing the meaning of the coordinate r , as long as we are in a static, spherically symmetric situation.*

That leaves us with a metric of the following form:

$$g_{\mu\nu} = \begin{pmatrix} g_{tt} & & & \\ & g_{rr} & & \\ & & g_{\theta\theta} & \\ & & & g_{\phi\phi} \end{pmatrix} = \begin{pmatrix} -A(r) & & & \\ & +B(r) & & \\ & & r^2 & \\ & & & r^2 (\sin\theta)^2 \end{pmatrix}. \quad (9.3)$$

Not bad. All of our guessing based on shrewd physical intuition has left us with a fairly simple metric that has only two undetermined functions of one variable, $A(r)$ and $B(r)$.

Unfortunately, that's as far as shrewdness is going to take us. At this point we, or really Schwarzschild, have to suck it up and calculate the Riemann tensor and then the Ricci tensor. We won't do that explicitly, although all the technology necessary to do so is given in Appendix B, so feel free to give it a shot. For now we'll just accept that it can be done, and from there we can calculate the terms on the left-hand side of Einstein's equation. The resulting expressions will be written in terms of $A(r)$ and $B(r)$ and their derivatives with respect to r .

Then we have to set those expressions equal to the right-hand side of Einstein's equation, namely, the energy-momentum tensor. But more good news comes our way: At the moment we're only concerned with what the metric is outside the gravitating body, where space is empty and $T_{\mu\nu} = 0$. Complicated things might happen inside the sun or a planet, but for our present purposes those are just spherical sources causing spacetime to warp around them.

Schwarzschild did all of that, and to his surprise the resulting equations weren't that hard to solve. (To be honest, they weren't exactly trivial, but Schwarzschild was pretty smart.) Here's the expression he found for $A(r)$ and $B(r)$:

$$A(r) = \frac{1}{B(r)} = 1 - \frac{2GM}{r}. \quad (9.4)$$

The full Schwarzschild metric, in other words, is

$$g_{\mu\nu} = \begin{pmatrix} g_{tt} & & & \\ & g_{rr} & & \\ & & g_{\theta\theta} & \\ & & & g_{\phi\phi} \end{pmatrix} = \begin{pmatrix} -\left(1 - \frac{2GM}{r}\right) & & & \\ & +\left(1 - \frac{2GM}{r}\right)^{-1} & & \\ & & r^2 & \\ & & & r^2 (\sin\theta)^2 \end{pmatrix} \quad (9.5)$$

Or in line-element form,

$$ds^2 = -\left(1 - \frac{2GM}{r}\right) dt^2 + \frac{1}{\left(1 - \frac{2GM}{r}\right)} dr^2 + r^2 d\theta^2 + r^2 (\sin\theta)^2 d\phi^2. \quad (9.6)$$

Isn't it gorgeous? That's the exact solution to Einstein's equation in empty space with spherical symmetry. In fact, it's the unique solution—we described how to guess it, but more rigorous analysis can prove that Schwarzschild is the only possible spherically symmetric metric that solves Einstein's equation in vacuum. You might object that Minkowski is another such solution, but just set $M = 0$ in (9.5) or (9.6) and you'll get Minkowski back as a special case.

In these expressions for the Schwarzschild metric, G is of course Newton's constant of gravitation, and M is the mass of the object whose gravitational field we have calculated. But just to be persnickety, we didn't derive the fact that M is the mass. What we derived (or sketched a derivation of) was the fact that for any M , a metric of the form (9.5) will solve Einstein's equation in vacuum. After the fact, we interpret M as the mass of some physical object like the sun, then we justify that interpretation by comparison with the Newtonian limit or something equivalent. It all

works out in the end, but it's worth keeping in mind that concepts we take as self-evident generally depend on our background theoretical commitments, and they might undergo subtle shifts when we update our underlying theory.

TIME DILATION

Let's stare mindfully at the Schwarzschild metric (9.5) and try to figure out what it is telling us.

The point of a metric is to allow us to calculate distances in space-time. That includes the proper time τ , which can be calculated by integrating $d\tau = \sqrt{d\tau^2} = \sqrt{-ds^2}$ along a timelike trajectory. Consider an object that stays fixed in the spatial coordinates (r, θ, ϕ) . This is a good approximation to you and me standing on the surface of the Earth, or even the Earth in orbit around the sun; in both cases there is actually motion (the surface of the Earth is rotating, and the Earth is orbiting the sun), but the corresponding speed is very small compared to the speed of light and can be neglected at a first pass, in classic spherical-cow style.

For a path at constant spatial coordinates we have $dr = d\theta = d\phi = 0$. (That's what it means to be stationary—there is no increment in those directions.) Looking at (9.6), the proper time along such a path obeys

$$d\tau^2 = \left(1 - \frac{2GM}{r}\right) dt^2. \quad (9.7)$$

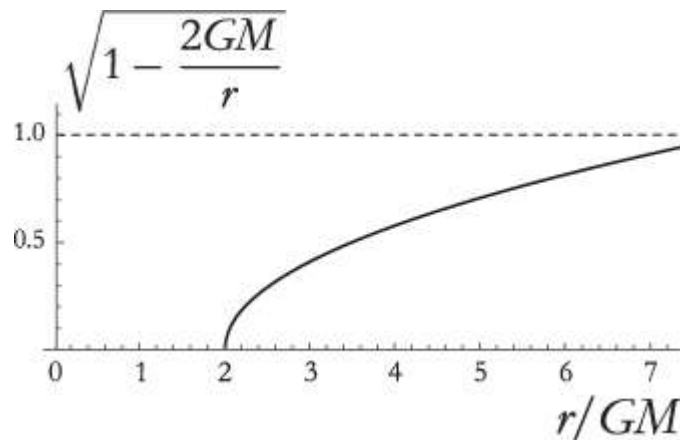
This is pretty easy to integrate. Take the square root of both sides. The quantity in parentheses doesn't depend on t , so it's just a constant as far as time is concerned. For a finite interval we get

$$\Delta\tau = \int d\tau = \sqrt{1 - \frac{2GM}{r}} \int dt = \sqrt{1 - \frac{2GM}{r}} \Delta t. \quad (9.8)$$

Remember that t is the coordinate time, a mere human convenience, while τ is the proper time, which is what clocks actually measure. This equation is telling us that a stationary observer will experience an amount of proper time that is proportional to the change in the coordinate time t , and the proportionality factor depends on the radial coordinate r .

That dependence is not hard to interpret. When r is large, the factor $\sqrt{1 - 2GM/r}$ is approximately 1, and the proper time and coordinate time are the same. Far away from the sun, the gravitational field is weak and spacetime is nearly flat. In those circumstances every fixed clock reads an amount basically equal to the coordinate time, much as Newton would have predicted.

But when r is close to (but still greater than) $2GM$, $2GM/r$ starts to approach 1, and $\sqrt{1 - 2GM/r}$ approaches zero. So any given change in t corresponds to less and less proper time as $r \rightarrow 2GM$. (For the moment, ignore what happens when r is less than or equal to $2GM$; that's going to require more thought.) When the gravitational field becomes strong, proper time clicks off more slowly than coordinate time.



This is **gravitational time dilation**. We've been careful to emphasize that you shouldn't say "time runs more slowly in a gravitational field," but you can see why it's tempting. Clocks still run at one second per second, but their relationship to the coordinate time has changed. That doesn't matter to any fixed observer, since who cares about some made-up coordinate?

Where it does matter is if we compare what happens on two different paths between the same start and end points. Imagine you and your friend are far away from the sun and you synchronize your watches. Your friend stays behind while you travel closer to the sun, where you hang out for an extended period before eventually coming back. You rendezvous back with your friend at some value of the coordinate time, but your elapsed proper time will be less than that. You will have aged less, measuring less time on your clock. (In fact, the gravitational field is extremely weak even near the surface of the sun, by general-relativity standards, so this effect is pretty small.)

It's much like the twin in Minkowski space who zipped out near the speed of light, even if in this case you were moving slowly relative to your friend the entire time. It's the curvature of spacetime that is doing the work, not your velocity. Check out the movie *Interstellar* if you want to see this happen to Matthew McConaughey and Anne Hathaway.

Gravitational time dilation is a real physical effect, which has been verified experimentally. It's a vivid illustration of the idea that gravity really is geometry. In a very direct sense, gravity affects how clocks measure intervals in spacetime.

SINGULARITIES

From the above discussion, it seems that something special happens when the radial coordinate r reaches the value

$$r = 2GM. \tag{9.9}$$

This is indeed an important quantity, known as the **Schwarzschild radius**. Before getting too excited about it, let's admit that what happens at the Schwarzschild radius is completely irrelevant for the questions that originally motivated us—the spacetime outside a planet or star. That's because the Schwarzschild radius is extremely tiny. For an object the mass of the sun it's about three kilometers, while for an object the mass of the Earth it's less than a single centimeter. The actual sun has a radius of about

700,000 kilometers, and for the Earth it's a bit more than 6,000 kilometers. In either case the corresponding Schwarzschild radius is deep inside the gravitating body, where we're no longer in empty space.

The Schwarzschild solution, meanwhile, only applies to the metric on spacetime in vacuum, outside of the gravitating body. Once we dip inside, the metric is going to take on a different form, and nothing special at all is going to happen at $r = 2GM$. It would seem to be a mathematical curiosity, prompted by solving Einstein's equation in empty space and carelessly extrapolating the result to situations where space isn't empty at all.

But we're allowed to ponder what happens in a situation where space would be empty all the way down to the Schwarzschild radius and even smaller. What if, through some calamity, all of the mass of the sun were squeezed into a ball just a few kilometers across, or the mass of the Earth were squeezed into less than a centimeter? We'd have to imagine packing matter extremely densely indeed, but crazy things sometimes happen in astrophysics. As we'll see, it can and does happen, and the result is a **black hole**: a region of spacetime that is so dramatically curved that light itself cannot escape. For a black hole, where there is no matter to get in the way, the Schwarzschild radius defines the **event horizon**, the point past which it is impossible to return to the outside world.

As soon as Schwarzschild first presented his metric, people worried about what was going on at the Schwarzschild radius. Looking at the metric (9.5), we see that the factor $1 - 2GM/r$ goes to zero when $r = 2GM$, so the metric component g_{tt} vanishes. Interpreted physically, that would seem to imply that no proper time passes if we sit stationary at the Schwarzschild radius, even though the coordinate label t ticks away as usual. Hmm, that's weird, but maybe not too worrisome; it's somewhat reminiscent of what happens on any null trajectory, and light travels on such trajectories all the time.

More problematic is the g_{rr} component of the metric, which is $1/(1 - 2GM/r)$ and therefore blows up to infinity at $r = 2GM$. When a quantity becomes infinite, we say we are faced with a **singularity**.

That sounds bad. But is it really bad? After all, components of the metric depend on what coordinate system we have chosen. It's really the curvature

that matters, not the metric components. Maybe we've just chosen an inconvenient coordinate system.

In fact, that's exactly what's going on, although it took physicists a number of years to figure it out. The apparent bad behavior of the metric at the Schwarzschild radius is merely a **coordinate singularity**—not anything physically ill-defined, just a bad choice of coordinates at that point. Any coordinate-invariant function you might construct out of the Riemann tensor remains finite at $r = 2GM$, even though a metric component blows up. There is something undeniably interesting happening at the Schwarzschild radius—it's the event horizon of a black hole, as we'll see in a moment—but space-time is completely well-behaved there.

This line of investigation leads us to notice that the metric also seems to blow up at another location, namely, when $r = 0$ and therefore $2GM/r = \infty$. There, g_{tt} goes to infinity and g_{rr} goes to zero. We might hope that there's a similar story to tell as with the Schwarzschild radius, and maybe it's our coordinate system that is to blame.

No such luck. The location $r = 0$ is a true **curvature singularity**, where the curvature of spacetime itself seems to become infinitely big. That actually is bad. We might hope that this singularity came about only because we oversimplified the situation by assuming exact spherical symmetry, and perhaps it can be avoided in more realistically messy situations. This hope was dashed in a series of **singularity theorems** proved by Roger Penrose and Stephen Hawking in the 1960s, which demonstrated that curvature singularities are predicted to arise under a wide variety of physically realistic conditions.

General relativity plays games with us, however. According to the **cosmic censorship conjecture**, formulated by Penrose in 1969, any singularity predicted by general relativity will be hidden behind an event horizon. There are no **naked singularities** out there in the world, unclothed by horizons, for us to study up close. Modern numerical simulations seem to indicate that cosmic censorship is not exactly true, but is true almost all the time. You can make up initial conditions that evolve to a naked singularity, but those conditions have to be infinitely precise; any deviation results in the singularity being stuck behind an event horizon. Searching for

naked singularities in the real world would not seem to be a promising research program.

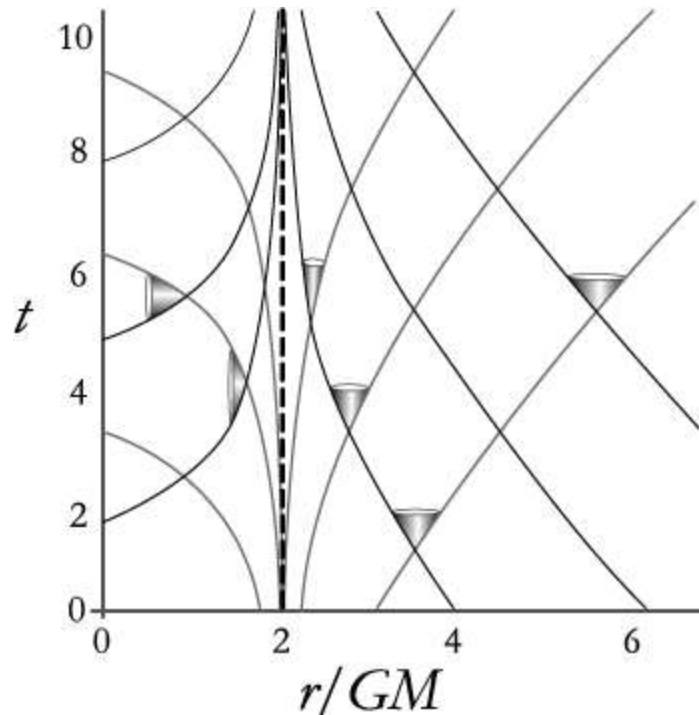
Most physicists think that singularities don't really exist in nature, naked or otherwise. Their prediction is a sign that we've taken our theory too seriously in a regime where it should be expected to break down. General relativity is a classical theory, after all, and the world is fundamentally quantum-mechanical. We can hope that a true theory of quantum gravity will smooth out the singularities predicted by Einstein's classical theory, or at least resolve any conceptual puzzles they raise, but as yet we don't understand that hoped-for theory very well.

BLACK HOLES

The Schwarzschild radius defines a surface called the event horizon, and the region of spacetime inside the event horizon is a black hole. Let's dig into what that means, imagining a spacetime that is everywhere described by the Schwarzschild metric, with no extended object like a star or planet getting in the way.

When someone hands you a metric, a good way of getting a handle on what's going on is to look at the light cones. The set of all light cones, after all, is real structure on spacetime, not some person's favorite way of defining coordinates or slicing spacetime into space and time. So it will be illuminating to plot some light cones in a spacetime diagram of the Schwarzschild geometry.

Here is the answer, plotted in (t, r) coordinates; we'll contemplate it first, justify it afterward. Everything is spherically symmetric, which means that nothing especially interesting happens in the θ or ϕ angular directions. We've drawn both "ingoing" and "outgoing" light rays from a few points and only indicated future-oriented light cones. If the figure is confusing, don't let it get you down—it confused Einstein and other very smart people for decades. Afterward we'll change coordinates to better see what's going on, but it's useful to think in Schwarzschild coordinates first.



There's a lot going on in this figure. On the right, at large values of r , things look pretty much normal, with null rays tilted at 45 degrees and light cones pointing upward. That makes sense, since far away from the black hole there's no noticeable gravitational field and everything resembles Minkowski spacetime.

As we creep up on the event horizon at $r = 2GM$, the light cones begin to close up. That seems a bit strange. It's almost as if we can't cross the Schwarzschild radius, because the light cones won't let us. But perhaps it's just an artifact of our coordinate system going bad—as we'll soon see, that's exactly right.

It's inside the event horizon that things look crazy. The light cones start very wide, then grow narrower as we move toward smaller values of r . What's striking is that they point to the left, not up. But the rule that we have to stay inside our light cones when moving forward in time hasn't gone away. That means that *moving to smaller r , inside the event horizon of a Schwarzschild black hole, is moving forward in time.*

We've been wrong about $r = 0$ all along. Implicitly leaning on our intuition from flat spacetime, you've most likely been thinking of $r = 0$ as a location in space, the origin of coordinates at the center of a black hole.

That's not right; $r = 0$ is not a location in space, it's a moment in time. Moreover, once you're inside the event horizon, it's a moment that is in your future. You cannot help but hit the singularity no matter how hard you might struggle. It's as inevitable as hitting tomorrow.

You might wonder how we can “discover” that $r = 0$ is a moment in time rather than a location in space. Aren't we the boss of our coordinates, and can't we define them as we choose? Certainly, but here we've already made our choice, back when we defined r in terms of the area of a sphere of fixed distance from the source. Once we made that choice—which we did in order to make things seem normal far away from the event horizon—we just extend the coordinate into a different regime and live with what happens. And what happens is that r becomes a timelike coordinate rather than a spacelike one.

It all seems quite bizarre. To make sure our feet are firmly planted in reality, let's dig into the equations responsible for the light cones we've drawn.

To “draw a light cone” means to pick a point and portray small line segments along which the spacetime interval is zero: $ds^2 = 0$. Glancing back at the line element (9.6), and ignoring θ and ϕ (because we're not moving in those directions), we have

$$-\left(1 - \frac{2GM}{r}\right)dt^2 + \frac{1}{\left(1 - \frac{2GM}{r}\right)}dr^2 = 0. \quad (9.10)$$

Let's massage this a little bit. Move the second term over to the right-hand side, multiply both sides by -1 to get rid of the annoying overall minus sign, then divide by $(1 - 2GM/r)$. We get

$$dt^2 = \frac{1}{\left(1 - \frac{2GM}{r}\right)^2}dr^2.$$

(9.11)

Looks like everything is squared, so let's take the square root of both sides, remembering to include a plus-or-minus symbol $\pm$ to indicate that either sign qualifies as a square root. Finally, divide both sides by dr to obtain

$$\frac{dt}{dr} = \pm \frac{1}{1 - \frac{2GM}{r}}$$

(9.12)

That's satisfying, because dt/dr is precisely the slope of the little line segment we draw to represent a light cone. (Remember we are specifically considering null trajectories, not arbitrary ones.) The plus/minus sign reflects the fact that light could be moving either inward or outward from the center.

Now we can connect this formula to the light cones we drew in the figure. At large values of r , we have $2GM/r \approx 0$, and therefore $dt/dr \approx \pm 1$. A slope of 1 or -1 indicates that our light rays are tilted at 45 degrees, which is just what happens in Minkowski spacetime, and indeed that's what we plotted in the figure.

As $r \rightarrow 2GM$, we get $1 - 2GM/r \rightarrow 0$, so $dt/dr \pm \infty$. That's the light cones "closing up"—their slope gets steeper and steeper on both sides, apparently coming together as we get closer to the event horizon.

Precisely at the Schwarzschild radius $r = 2GM$ the metric coefficients blow up, so let's put that aside for the moment. But if we fearlessly peek inside, something unexpected happens. When $r < 2GM$ the quantity $2GM/r$ will be greater than one, and therefore $1 - 2GM/r$ is going to be a negative number. From peering at the line element (9.6) we see that both g_{tt} (the coefficient of dt^2) and g_{rr} (the coefficient of dr^2) are going to change signs. Outside the event horizon, g_{tt} is negative and g_{rr} is positive, just like in Minkowski space. That reflects the fact that t is the timelike coordinate, while r is a spacelike coordinate.

But inside the horizon, these signs flip. This has a dramatic consequence: t is now spacelike, and r is timelike. Physically, once we're inside the Schwarzschild radius, moving to ever-smaller values of r is not moving toward the center, it's moving toward the future. Which is what physical particles actually do, of course. And why it's impossible to avoid ultimately reaching the singularity at $r = 0$.

This behavior is sometimes expressed (even by folks who really should know better) as “time and space swap roles inside the event horizon of a black hole.” No. What happens is that the coordinates t and r swap their roles. Coordinates are a human invention and you shouldn't confuse them with fundamental features of reality. Time is still time and space is still space, no matter where we are or what coordinate system we are employing. If you were to fall into a sufficiently large black hole, you wouldn't even notice anything special upon crossing the event horizon. Your wristwatch would certainly not start measuring distance instead of time.

One more word of advice: if you fall into a black hole, don't struggle. You can't avoid the singularity in your future; in fact, you will hit it pretty quickly—a few hours for a billion-solar-mass black hole, and about one one-hundred-thousandth of a second for a one-solar-mass black hole. But that's if you just fall freely. And free fall, remember, is geodesic motion, which *maximizes* your proper time. If you accelerate in a foolhardy attempt to escape, you'll move on a path of shorter proper time. From your perspective, you'll just reach the singularity sooner.

THE EVENT HORIZON

The coordinate singularity at the Schwarzschild radius is the one ugly blotch on the picture we have just painted. From the spacetime diagram, as mentioned, one might wonder whether it's even possible to reach the event horizon, since the light cones appear to close up there. A timelike trajectory would seem to just go straight up in the t coordinate, never actually crossing the Schwarzschild radius.

On the other hand, we learned from our look at gravitational time dilation that any fixed amount of t corresponds to less and less proper time τ as we approach the horizon. We can turn that around: Any fixed amount of

proper time corresponds to more and more t as we approach the horizon. This is consistent with the idea that we're facing a coordinate problem rather than a physical one. Maybe, even though it looks like a timelike trajectory just shoots off to $t \rightarrow +\infty$, a real traveler could actually traverse an infinite amount of t in a finite proper time. So what happens to them a moment later?

What might solve this puzzle is a coordinate system that is better-behaved at the Schwarzschild radius, and happily there are such coordinate systems. A convenient one is called **Eddington–Finkelstein coordinates**, after Arthur Eddington and David Finkelstein. This system relies on the same spatial coordinates (r, θ, ϕ) that we've been using for Schwarzschild, but introduces a new time coordinate t^* , defined by

$$t^* = t + r + 2GM \log \left| \frac{r}{2GM} - 1 \right|. \quad (9.13)$$

So our new time coordinate is our old time coordinate, plus our old radial coordinate, plus the logarithm of a certain function of the radial coordinate. It seems a little arbitrary, but there is a reason behind this specific form: Near the event horizon the logarithm goes to, which can cancel out t going to, and we can reach the horizon at a finite value of t^* .

Rather than showing that explicitly, it's easier to just write down the metric in the (t^*, r, θ, ϕ) coordinates and look at the light cones. The components of the metric are

$$g_{\mu\nu} = \begin{pmatrix} g_{t^*t^*} & g_{t^*r} & & \\ g_{rt^*} & g_{rr} & & \\ & & g_{\theta\theta} & \\ & & & g_{\phi\phi} \end{pmatrix} = \begin{pmatrix} -\left(1 - \frac{2GM}{r}\right) & 1 & & \\ & 1 & 0 & \\ & & r^2 & \\ & & & r^2 (\sin\theta)^2 \end{pmatrix}, \quad (9.14)$$

which in line-element form corresponds to

$$ds^2 = -\left(1 - \frac{2GM}{r}\right)(dt^*)^2 + dt^* dr + dr dt^* + r^2 d\theta^2 + r^2 (\sin\theta)^2 d\phi^2. \quad (9.15)$$

This is a bit different from what we've seen before; there is no g_{rr} component, but there are off-diagonal terms g_{t^*r} and g_{rt^*} . You might be surprised that g_{rr} disappeared even though we didn't change the definition of r ; that's because the role of r has been partially absorbed into t^* , as can be seen in (9.13).

In the Eddington-Finkelstein coordinates, there is no more coordinate singularity at the Schwarzschild radius $r = 2GM$; all of the components in (9.14) remain finite numbers. (The $g_{t^*t^*}$ component goes to zero, but zero is a finite number.) This is reflected in how we draw the light cones, as portrayed in the next figure (with one angular dimension restored for aesthetic purposes).

In these coordinates, light cones don't close up at the horizon. What they do, instead, is tilt over as we move to decreasing r . Again we see that inside the horizon, staying inside the light cones forces us to move into the singularity at $r = 0$, which is in the future.

These improved coordinates help us understand what's happening at the Schwarzschild radius. The horizon is at a fixed radial coordinate, $r = 2GM$, and from the outside the black hole will look like a dark region of spacetime with a fixed size. But the light cones line up with the horizon on one side. At $r = 2GM$, the vertical t^* direction is actually null, rather than timelike (or spacelike).

That's what's so special about the event horizon. At $r = 2GM$, in order to stay on the horizon, you have to move in a specific direction, and do so at the speed of light. Any timelike trajectory would lead you deeper into the black hole. More generally, timelike paths can only pass one way through the horizon. It's not just that you can't imagine rocket engines powerful enough to escape from a black hole. It's that moving from the black-hole

interior back to the outside world would require motion faster than the speed of light.

CHARGED AND SPINNING BLACK HOLES

The Earth is approximately spherical, but not quite: It is just a bit oblate, with the distance between the poles being shorter than the diameter along the equator by about 0.3 percent. Moreover, the Earth is lumpy, with deep oceans and tall mountains. As a result, the Earth's gravitational field is not quite uniform, and orbiting satellites have provided precise maps of exactly where the Earth's gravity is a bit stronger or weaker than average. Other planets will generally have their own features of local interest; the gravitational field of a planet can be highly distinctive.

Not so for black holes. They are not lumpy. On the contrary, there is an idea called the **no-hair theorem** (although mathematicians call it the “no-hair conjecture,” since it hasn't been rigorously proven): Every black hole settles down to a state that is entirely characterized by its mass, electric charge, and spin. Any two black holes with the same values of those quantities will have the same gravitational fields. That's going to hold no matter what went into making them: A black hole created by the collapse of a massive star will end up looking exactly the same as one made from an equivalent amount of library books or peanut butter. The latter cases probably don't occur in nature, but if they did, you couldn't tell by examining the resulting black hole.

Black holes with electric charge but no spin will have a spherically symmetric electric field around them, much like a charged particle would. That electric field contains energy, which has to be accounted for when solving Einstein's equation. The metric for such a black hole is given by the **Reissner–Nordström solution**, which was derived soon after the Schwarzschild solution by a number of people. That's not so surprising; since everything is still spherically symmetric, the solution isn't all that different from Schwarzschild.

At least on the outside. The Reissner–Nordström solution, taken at face value and pushed as far as it can go, describes an infinite series of black holes connecting separate universes, all hidden behind the event horizon.

This is why you shouldn't always find exact solutions to equations and take them at face value, especially when extended beyond the physical situation they were intended to describe. Even the Schwarzschild solution, when maximally extended, describes two different universes connected by a **wormhole**. This fact was realized by Ludwig Flamm in 1916 and rediscovered by Einstein and his collaborator Nathan Rosen in 1935, so the Schwarzschild wormhole is sometimes called an **Einstein– Rosen bridge**.^{*} But nobody believes that real black holes out there in our galaxy are hiding wormholes and extra universes behind their event horizons. That's because real black holes aren't precisely empty space (or electric field) everywhere. They are formed by infalling matter, and the existence of that matter affects the spacetime metric in important ways. As a result, real black holes have singularities inside, but not gateways to other universes.

It took a lot longer to find the metric for a spinning black hole, which was eventually derived by Roy Kerr in 1963 and is now called the **Kerr solution**. The difficulty stems from the lack of spherical symmetry; there is a preferred direction, the axis of rotation of the black hole. But Kerr's work was much more than a mathematical tour de force. In the real world we don't expect black holes to have substantial electric charge; if one did, it would quickly be neutralized by attracting and absorbing particles of the opposite charge. But we do expect black holes to be rotating, and rapidly so. Almost every black hole in the universe will be accurately described by the Kerr metric.

THE AREA THEOREM

Although the idea of a black hole was implicit in Schwarzschild's work from 1915, it took a long time for physicists to understand the concept. The delay was due in large part to a difficulty in appreciating what features were physically real and what were merely coordinate artifacts, which is why we have been emphasizing that distinction. It was understood, for example, that gravitational time dilation became infinitely strong for an observer that hovered right at the Schwarzschild radius, so time would appear to freeze from the perspective of an outside observer. Therefore, people reasoned, an object that collapsed to that size would become a "frozen star," stuck forever at that radius. They didn't carefully ask what would happen from

the point of view of an infalling observer, who we now know would simply dive right into a black hole.

It was in the late 1950s that event horizons were finally understood, due to work by David Finkelstein, Martin Kruskal, and others. This helped inaugurate a new era of active research in general relativity, led by John Wheeler in the United States, Dennis Sciama in the UK, and Yakov Zeldovich in the USSR. Wheeler popularized the term “black hole,” and research on them was propelled forward by Penrose, Hawking, and their collaborators in the 1960s and ’70s.

One important result of that period was the **area theorem**, proven by Hawking in 1971. It states that the area of the event horizon of a black hole, or the combined area of several black holes, only increases with time, never decreases. Like any good theorem, it relies on assumptions; for example, we assume that real particles have only positive masses, otherwise you could throw negative-mass particles into a black hole to make it shrink. And of course we are thinking purely classically—once quantum mechanics comes into the game, black holes will lose energy to radiation and therefore shrink after all, although it generally happens extremely slowly.

The area theorem becomes important when we’re thinking about two black holes coalescing. When that happens, some of the total energy is going to be carried off in waves of gravitational radiation, since spacetime is being shaken by the rapidly moving black holes. But the area theorem guarantees that not too much energy will escape. The resulting single black hole will have an event horizon area that is at least as large as the sum of the areas of the two holes from which it was formed.

You might wonder why we don’t simply say that the mass of a black hole never decreases, rather than saying that its horizon area never decreases, given that the Schwarzschild radius is $r = 2GM$ and the horizon area is therefore $A = 4\pi r^2 = 16\pi G^2 M^2$. The answer is that the mass *can* decrease, and that’s because there are such things as spinning black holes.

For a rotating black hole, the horizon area depends on both the mass and the amount of spin. It turns out that energy can be extracted from a spinning black hole by throwing matter into it with opposite angular momentum. Roger Penrose devised an explicit way to do this, known as the **Penrose process**. We might imagine an advanced alien civilization that fed its power

grid by extracting energy from a spinning supermassive black hole. But Hawking's theorem guarantees that the horizon area will increase all along the way, and eventually the black hole will no longer be spinning and there will be no further energy left to extract.

BLACK-HOLE MECHANICS

Something about the area theorem should bother you. It says that the area of a black hole event horizon will only increase over time. But that implies an arrow of time: The area increases toward the future, not to the past. Where did that come from? Einstein's equation doesn't treat the past and future any differently.

Part of the answer is a narrow and technical one. While general relativity doesn't by itself have an arrow of time, the black hole solutions we've been considering do. In the back of our minds, we imagine that there was a star or other astrophysical object in the past, which collapsed (as time moved toward the future) to make our black hole. It's possible to reproduce all of our mathematical discussion with the direction of time reversed. The result would be a **white hole**, containing a singularity in the past, surrounded by an event horizon from which matter can escape but never return. A white hole is a black hole run backward in time. We don't think that white holes exist in nature, but modern cosmology posits that our observable universe emerged from a Big Bang singularity in the past, and there is certainly a family resemblance there. The universe as a whole is something like a white hole.

This connection suggests a deeper relationship between black holes and thermodynamics (which is, after all, the origin of time's arrow). In the early '70s physicists pointed out that there was an intriguing correspondence between Hawking's theorem ("area always increases") and the second law of thermodynamics ("entropy always increases"). It was thought of as an amusing analogy, nothing more.

Until, that is, the work of Jacob Bekenstein, who was a graduate student working under John Wheeler. Bekenstein suggested that black holes really do have entropy, and that the entropy is proportional to the area of the horizon. More famous physicists scoffed at him, and for good reason: If black holes have entropy, then by the conventional rules of thermodynamics

they would have to have a temperature. (In classical thermodynamics, when we change the energy of a system at fixed volume, the energy change divided by the entropy change is equal to the temperature.) And that means they would give off radiation. And that means they wouldn't be black after all.

Hawking, in particular, took umbrage at Bekenstein's proposal. But he took it seriously enough to set out to prove it wrong, using techniques that combined quantum field theory and general relativity. As is well-known by now, he ended up proving Bekenstein right. Black holes do have entropy, and they do have a temperature, and they do give off radiation, once quantum effects are taken into account. That's a story for another day, once we have some quantum mechanics under our belts. For now let us content ourselves with realizing that this **Hawking radiation** is extremely faint indeed. For a solar-mass black hole, the temperature is less than one-millionth of a degree Kelvin, much too small to be detectable (and larger black holes have lower temperatures).

THE REAL WORLD

It was at least a little bit of a surprise to physicists when the 2020 Nobel Prize in Physics was awarded to Roger Penrose, Reinhard Genzel, and Andrea Ghez. Penrose's share, in particular, represented a departure for the Royal Swedish Academy of Sciences. Nobody can doubt the brilliance or importance of his work, but Nobels are more often given for experimental findings or very specific theoretical models, not for proving that an established theory (general relativity) implies the existence of a particular phenomenon (black holes). But Penrose's case was enormously strengthened by the work of Genzel and Ghez, who had collected strong observational evidence for the existence of a real black hole at the center of our galaxy.

Black holes have moved from theoretical curiosities to the fore-front of modern astrophysics. We haven't seen one up close—perhaps that's for the best—but there is overwhelming evidence that they exist and play important roles in multiple astrophysical processes.

Indeed, there is a whole menagerie of black holes with different sizes and origin stories. Perhaps the most famous kind are those formed at the

end of the life of a massive star. Stellar energy comes from the fusion of light elements into heavier ones in the star's core. Eventually a star will exhaust all its usable fuel. At that stage, most stars will settle down to a **white dwarf** stage, which will gradually cool over time. More massive stars will contract to a **neutron star**, in which protons and electrons have combined into neutrons. The most massive stars, however, will collapse all the way down to black holes. We expect that most black holes formed in this way will be at least three times the mass of our sun.

One might wonder how we would ever detect the existence of stellar-remnant black holes. They are black, after all. But they are also spinning; even a small amount of rotation in the initial star can become significant when the mass is squeezed down to black-hole size. As a result, matter that gets attracted to the black hole tends to accumulate in an **accretion disk** in its equatorial plane. There can be a considerable amount of such matter, especially if the black hole is part of a binary system with another star. The temperature of matter in an accretion disk becomes very high, enough to give off high-intensity X-ray radiation. It's those X-rays that astronomers can observe. Most black holes won't be surrounded by conveniently observable accretion disks, but given the number of massive stars in the Milky Way, astronomers estimate that there could be hundreds of millions of stellar-mass black holes scattered throughout our galaxy. (There are about 100 billion stars here, so black holes are still a tiny fraction.)

There is an entirely different population, the supermassive black holes lurking at the centers of galaxies. These are millions or billions of times the mass of the sun, and astronomers believe they are present in most large galaxies in the universe. Our own Milky Way features a black hole of about 4 million solar masses. We have learned about it in part by tracking the high-velocity orbits of stars around a compact, dark region in the constellation Sagittarius. It is for those observations that Genzel and Ghez received their share of the Nobel Prize.

The Milky Way is a mature galaxy, in which most gas and dust has been converted to stars. This doesn't leave a lot of stray matter to fall into the central black hole, so ours is relatively quiet. But young galaxies often feature black holes with enormous, brightly shining accretion disks. We see these scattered throughout the observable universe as **quasars** or (more generally) **active galactic nuclei**.

Kip Thorne tells the story of the First Texas Symposium on Relativistic Astrophysics, held in Dallas in December 1963.* Astronomer Maarten Schmidt had just measured the distance to a quasar for the first time, demonstrating that it is extremely far away. Given how bright it appears to us on Earth, this object must be extremely luminous. Astronomers at the symposium were bubbling with excitement, tossing back and forth new scenarios for what quasars might be and how relativity might be important for understanding them. Meanwhile, a young mathematician from New Zealand gave an esoteric ten-minute talk on a new solution to Einstein's equation for a spinning spacetime. It was largely ignored by the audience, many of whom slipped out of the hall for a break. The speaker was Roy Kerr, and almost nobody realized that he had described the metric for a spinning black hole, which would prove to be the crucial ingredient in understanding quasars.

Since 2015 we've had a brand-new way of gathering information about black holes: **gravitational waves**. If gravity is the curvature of spacetime, a gravitational wave is a ripple of curvature propagating at the speed of light. Just like ordinary electromagnetic waves can be produced by rapid motions of charged particles, gravitational waves are produced by rapid motions of massive objects.

The problem is that gravity is a weak force, so such waves are hard to detect. In 2015 such a detection was announced for the first time by the Laser Interferometer Gravitational-Wave Observatory (LIGO), working in collaboration with the Virgo Observatory in Europe. LIGO consists of two observatories, each with a pair of four-kilometer-long evacuated tubes oriented at right angles to each other. Lasers travel through the tubes and bounce off mirrors at the far end. A passing gravitational wave will induce a tiny distortion of the spacetime along the tubes, altering the time it takes the laser beams to travel to the mirrors and back. The signal is very tiny indeed: A typical wave will cause the mirrors to oscillate by a distance smaller than the width of a single proton. It is no surprise that it took many years of design and construction work, and many millions of dollars, to build such a sensitive instrument. Nor was it any surprise in 2017 when the Nobel Prize went to Rainer Weiss, Kip Thorne, and Barry Barish for their work in developing LIGO.

The 2015 event resulted from the merger of a 36-solar-mass black hole with a 29-solar-mass hole. These two behemoths, about 1 billion light-years away, had been orbiting closely to each other for an unknown period. The orbital motion produced gravitational waves, and the holes inched closer together as the system lost energy into this radiation. The eventual coalescence event lasted a matter of seconds until the single remaining black hole quickly settled down (in accordance with the no-hair theorem).

Since then, LIGO and Virgo have detected dozens more such events. Most of them have involved black holes between ten and one hundred times the mass of the sun. Partly that's a function of what kinds of black holes are out there in the universe, and partly it's due to the specific wavelengths the detectors are sensitive to.

Modern astrophysicists are extremely excited by the prospects for what we might learn from this new window on the cosmos. We'll learn more about black holes, of course, but also potentially about the life cycles of stars, the structure of galaxies, and perhaps about the size and shape of the universe. Most of all, like all good scientists, we are ready to be surprised by something completely unexpected.

* This choice means that r will not necessarily (or actually, as it turns out) be the distance from the origin. That's a different physical quantity, and we don't know ahead of time how it will relate to distance as measured along spheres of fixed radius. We can pick one, and then have to see what happens to the other. Area and circumference are both defined on the sphere itself, without reference to diving inside.

* I served as a science consultant on the 2011 film *Thor*. If you notice Jane Foster, played by Natalie Portman, talking about Einstein– Rosen bridges, that's my fault.

* Kip Thorne, *Black Holes and Time Warps: Einstein's Outrageous Legacy* (New York: W. W. Norton, 1994), [chapter 9](#).

APPENDICES

APPENDIX A: FUNCTIONS, DERIVATIVES, AND INTEGRALS

In this appendix we run through some very common functions and manipulations thereof, in case you might feel like taking a swing at solving some of the equations we've talked about.

A quick notational comment: we often use letters from the end of the alphabet, such as x , y , z , to indicate variables—quantities that are left undetermined in an equation, perhaps to be solved for later. Letters from the beginning of the alphabet, such as a , b , c , typically stand for constants—quantities that have some particular value, even if we might not tell you (or know) what it is. And letters from the late-early alphabet, like f and g , are often used for functions: maps from one variable to another. So a very standard thing to write would be $f(x) = ax + b$, where x is a variable, a and b are constants, and $f(x)$ is a function of x . The idea of x being a variable is that this relation is supposed to hold no matter what the value of x is, whereas a and b are thought of as fixed quantities, even if we don't tell you what they are. It's a subtle distinction.

Of course, this is all completely a matter of convention, and in principle we can use whatever letters we like. Before too long we'll run out of alphabet entirely and have to resort to Greek letters.

DEFINITE AND INDEFINITE INTEGRALS

In our introduction to integrals in [Chapter 2](#), we glossed over one important detail: An integral represents the area under a curve. But that only makes

sense if we specify a beginning and an end for the region whose area we are describing. This leads to a distinction between a **definite integral**, where we specify the endpoints, and an **indefinite integral**, where the endpoints are left unspecified.

Consider a case where the integral of some function $f(x)$ is some other function $F(x)$. In other words,

$$\int f(x) dx = F(x). \tag{A.1}$$

That's the indefinite integral. We're clearly being a little sloppy, since we didn't specify the endpoints. Sometimes to be careful we add "plus a constant," to indicate that the exact value will depend on the region chosen.* But often we just assume you are keeping your wits about you and know what to do with the expression for the integral. Throughout these books, by "the integral of a function" we generally mean the indefinite integral.

The definite integral lets us delimit the region of integration explicitly, by specifying the beginning at the bottom of the integral sign and the endpoint at the top:

$$\int_a^b f(x) dx = F(b) - F(a). \tag{A.2}$$

So the definite integral is the difference of the values of the indefinite integral at the final point and the initial point. Let's see it in action.

CONSTANT FUNCTIONS

Consider an extremely simple function, namely, a constant, $f(x) = c$. Not much detail to go into, but we're starting gently here. The slope of a constant is flat, so it comes as no surprise that its derivative is zero:

$$\frac{d}{dx}c = 0.$$

(A.3)

The indefinite integral is proportional to x itself:

$$\int c \, dx = cx.$$

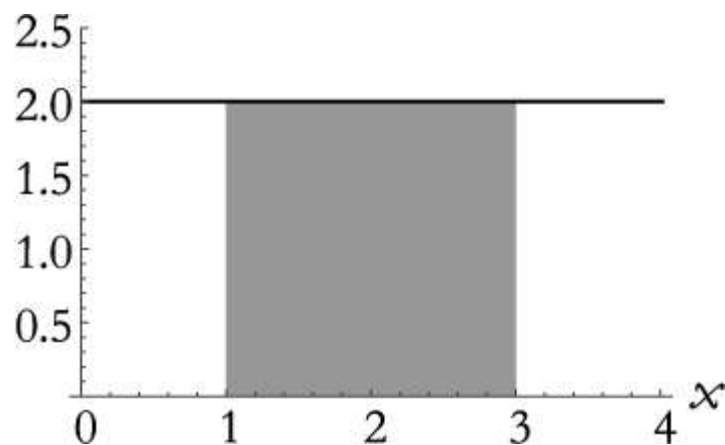
(A.4)

That means that the definite integral is proportional to the distance between the endpoints:

$$\int_a^b c \, dx = c(b - a).$$

(A.5)

This is illustrated in the figure for $c = 2$, $a = 1$, $b = 3$. The area under the curve is $2 \times (3 - 1) = 4$, as we might hope.



The parentheses in (A.5) mean that the quantity c is being multiplied by the quantity $(b - a)$, not that $b - a$ is the argument of a function, as x is in $f(x)$. Similar notation, different meanings; you're supposed to be able to discern the difference from context.

LINEAR COMBINATIONS

In mathematics we say that a sum of the form $af(x) + bg(x)$, where a and b are constants, is a **linear combination** of the two functions $f(x)$ and $g(x)$. The word “linear” refers to the fact that each function appears just once, and to the first power; multiplying functions together, or raising them to a different power, would be nonlinear.

Both differentiation and integration are **linear operators**. That means that the derivative of a linear combination is the linear combination of the corresponding derivatives, and likewise for integrals. So for derivatives we have

$$\frac{d}{dx}[af(x) + bg(x)] = a\frac{df}{dx} + b\frac{dg}{dx},$$

(A.6)

and for integrals,

$$\int[af(x) + bg(x)]dx = a\int f(x)dx + b\int g(x)dx.$$

(A.7)

This works (of course) even if the second term is completely absent, and the function we want to differentiate or integrate is just $af(x)$. In these cases we can just “take the constant outside the derivative (or integral).” And if we’re integrating with respect to x (as indicated by the dx symbol), then anything that doesn’t depend on x counts as a constant, even if it depends on another variable: $\int f(x)g(y)dx = g(y)\int f(x)dx$.

PRODUCTS

Let’s say we have the product of two functions, $f(x)g(x)$, where we’ll henceforth drop the (x) and just write fg to keep things cleaner. Then there is a simple but somewhat nonintuitive formula for the derivative of the product:

$$\frac{d}{dx} fg = f \frac{dg}{dx} + g \frac{df}{dx}. \quad (\text{A.8})$$

You can think of this as “first times derivative of the second, plus second times derivative of the first.” It’s called the **Leibniz rule**, after Gottfried Leibniz.

The existence of such an elegant procedure for taking the derivative of a product is the underlying reason why mathematicians generally consider differentiation to be “easy.” Almost all functions we care about can be built up (perhaps recursively) in terms of combinations of other functions by addition, multiplication, and so on. The Leibniz rule implies that the derivatives of most functions can be written explicitly in terms of other functions (or “in closed form,” as we say).

It would now be natural to present the formula for the integral of a product of two functions, but sadly no such formula exists. Integration is hard, both conceptually and in practice.

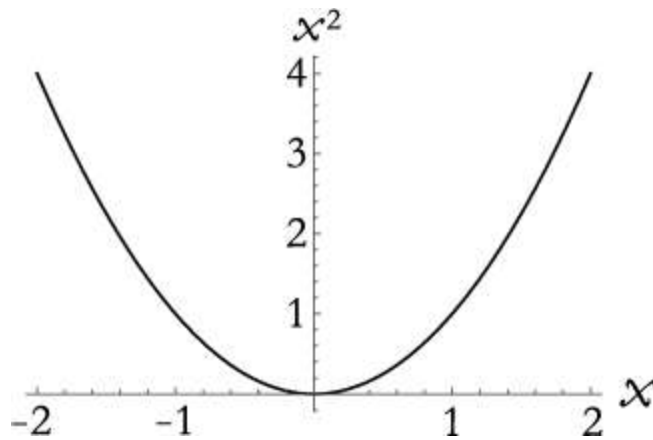
POWERS

Moving from general principles to specific functions, the most common thing we will encounter is a variable x raised to a power a , written x^a . The variable here is the **base** and the power is the **exponent**, but this is to be distinguished from the exponential function, where a constant is raised to the power of the variable, as we’ll discuss below. If a is a positive integer, x^a is equal to x times itself a times. But there’s no trouble using mathematical trickery to define x^a when a is not an integer, when it’s negative, or even when it’s a complex number.

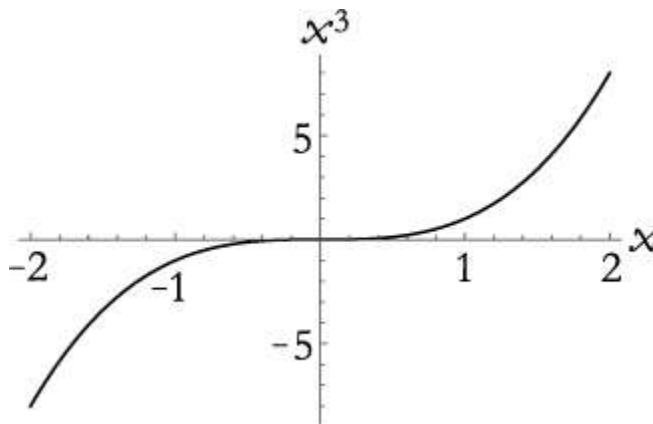
Two useful facts about powers: when multiplying powers of the same variable, we simply add the exponents together, and when we raise a power to another power, the exponents are multiplied.

$$x^a x^b = x^{a+b}, \quad (x^a)^b = x^{ab}. \quad (\text{A.9})$$

Let's look at some simple (probably familiar) examples. The function x^2 is a parabola.



The value of this function is never negative, because multiplying two negative numbers together (x and itself) gives a positive number. The same goes for whenever we raise x to some other even integer, and the curve will look qualitatively the same. When the power a is a negative integer, the negative side of the function is minus the positive side, as in the case of x^3 .

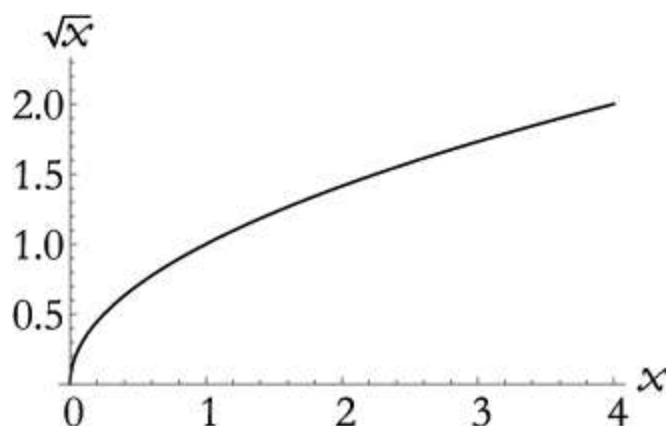


We can also define fractional powers, although in that case we're restricted to non-negative values of x . The way to think about it is that raising something to the power of $1/a$ undoes the action of raising it to the power a , because successive powers get multiplied in the exponent:

$$\left(x^a\right)^{\frac{1}{a}} = x^{\left(\frac{a}{a}\right)} = x^1 = x.$$

(A.9)

As a result, $x^{1/2} = \sqrt{x}$ looks like a parabola tilted on its side.

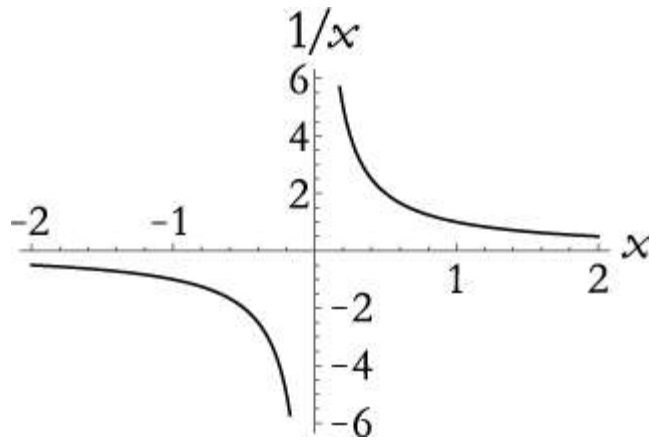


Negative or inverse powers can likewise be defined by thinking about the product of a power and its negative. The reciprocal function $x^{-1} = 1/x$, for example, can be defined by demanding that it satisfy

$$x \cdot x^{-1} = x^{1-1} = x^0 = 1.$$

(A.10)

The resulting graph has a discontinuity at $x = 0$, but it's nothing to be afraid of. We just say that $1/x$ is not defined at that point.



The derivative of a power is simplicity itself: lower the power by one, and multiply the entire expression by the original power:

$$\frac{d}{dx} x^a = ax^{a-1}. \quad (\text{A.11})$$

The integral, sensibly enough, bumps up the power by one:

$$\int x^a dx = \frac{x^{a+1}}{a+1}. \quad (\text{A.12})$$

For fun, you can verify that if you first take the derivative, then the integral, you get back to the original function, as you should.

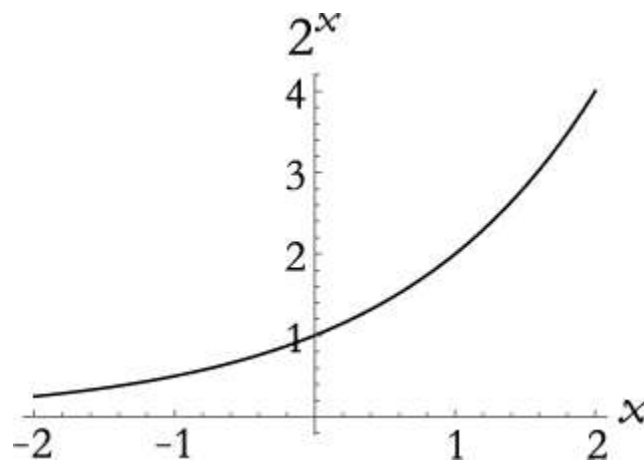
There's a lurking problem, however: when $a = -1$, it looks like we're dividing by zero in (A.12). Indeed, and there's a special formula to handle that case:

$$\int x^{-1} dx = \ln|x|. \quad (\text{A.13})$$

The vertical bars in x are absolute value signs: if x is positive we leave it alone, if x is negative we multiply it by -1 , so the result is non-negative. The function $\ln x$ is the natural logarithm, so we should explain that next.

EXPONENTIALS AND LOGARITHMS

We now move to the case where the variable is in the exponent, simply known as an **exponential** function, $f(x) = a^x$. The basic idea is pretty straightforward, with the plot shown in the figure for the case $a = 2$.

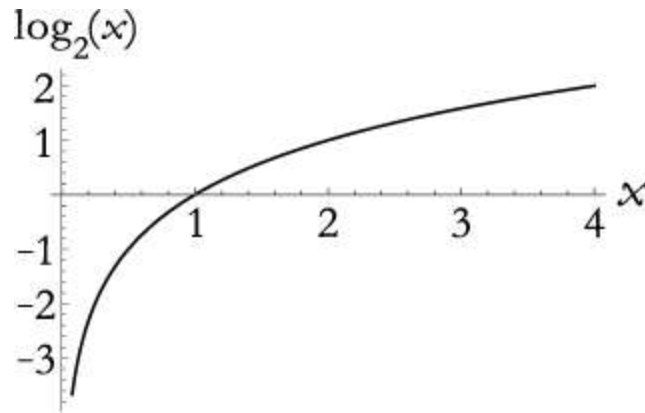


The inverse function of a^x is the **logarithm** (base a), which satisfies

$$\log_a(a^x) = a^{\log_a(x)} = x$$

(A.14)

Just as exponentials are paradigmatic functions that grow quickly, logarithms (or just “logs”) are paradigmatic functions that grow slowly as x gets large. The logarithm of 1 equals zero, and $\log_a(a) = 1$. At very small x the logarithm goes to $-\infty$, which makes sense if we think of $\log_a(x)$ as “the base we would have to raise a to in order to obtain x .” Given a , to get a number close to zero by raising it to some power, that power has to be large and negative.



There is a wrinkle in the world of exponentials and logarithms: a special role played by a particular quantity, **Euler's number**:

$$e = 2.71828 \dots \quad (\text{A.15})$$

The expression for e contains an infinite number of terms that never fall into a repeating pattern. Like $\pi = 3.14139 \dots$ it is **irrational**, a number that is not expressible as the ratio of any two integers. There are many ways to define e , but perhaps the most satisfying is that e^x is the only non-constant function that is equal to its own derivative:

$$\frac{d}{dx} e^x = e^x. \quad (\text{A.16})$$

For exponentials with other bases, the derivative looks like

$$\frac{d}{dx} a^x = \ln(a) a^x. \quad (\text{A.17})$$

Here we've defined the natural log, which is just the logarithm base e :

$$\ln(x) = \log_e(x) \quad (\text{A.18})$$

It's the natural log that appears in (A.13), the integral of $1/x$. Looking at (A.17), and remembering that $\log_a(a)=1$ for any a , we see that the annoying factor of $\ln(a)$ disappears when $a = e$, leaving us with the elegant form (A.16). This is why most physicists use e as the base of their logarithms whenever possible.

The integral formula for an exponential is similarly straightforward,

$$\int a^x dx = \frac{a^x}{\ln(a)}. \quad (\text{A.19})$$

The derivative of a logarithm is

$$\frac{d}{dx} \log_a(x) = \frac{1}{\ln(a)} x^{-1}, \quad (\text{A.20})$$

and its integral is

$$\int \log_a(x) dx = \frac{x \ln(x) - x}{\ln(a)}. \quad (\text{A.21})$$

You can see how they all look their prettiest when $a = e$ and $\ln(a) = \ln e = 1$.

TRIGONOMETRIC FUNCTIONS

The last set of famous functions we'll look at are the trigonometric functions, especially the sine and cosine. In this case, the argument of the function is generally going to be an angle rather than a real number, so we'll denote it as θ rather than x . And importantly, we're going to be measuring our angles in radians rather than degrees. One hundred eighty degrees corresponds to π radians, so it's easy to convert back and forth.

We introduced trig functions back in [Chapter 3](#), so here we skip right to some of their interesting properties. Pythagoras's theorem instantly gives us a famous relationship between the sine and cosine,

$$(\sin \theta)^2 + (\cos \theta)^2 = 1. \quad (\text{A.22})$$

If we have a vector $\vec{v}$ with components v^i in flat, three-dimensional Euclidean space, we can define its **norm** (length) by Pythagoras once again,

$$|\vec{v}| = \sqrt{(v^1)^2 + (v^2)^2 + (v^3)^2}. \quad (\text{A.23})$$

Then the dot or inner product between two vectors can be expressed in two equivalent ways, one using components and the other using the cosine of the angle between them:

$$\vec{v} \cdot \vec{w} = v^1 w^1 + v^2 w^2 + v^3 w^3 = |\vec{v}| |\vec{w}| \cos \theta. \quad (\text{A.24})$$

One very nice thing about sines and cosines is that they are derivatives (and integrals) of each other.

$$\frac{d}{d\theta} \sin \theta = \cos \theta,$$

(A.25)

$$\frac{d}{d\theta} \cos \theta = -\sin \theta.$$

(A.26)

You just have to remember where the minus sign goes, which you can figure out if you remember that $\cos \theta$ is the one that starts at one and decreases, so its derivative for small positive angles has to be negative, which matches $-\sin \theta$. The integrals follow a similar pattern, with the minus sign moved (which makes sense if we remember that integrals undo derivatives).

$$\int \sin \theta \, d\theta = -\cos \theta,$$

(A.27)

$$\int \cos \theta \, d\theta = \sin \theta.$$

(A.28)

* Two mathematicians are in a bar, arguing over the mathematical competence of the general public. One is extremely dismissive, while the other insists that laypeople can be surprisingly knowledgeable. When the first mathematician goes to the restroom, the second calls over their waitress. “Listen,” he says, “when my friend comes back, I’ll ask you a question, and you reply ‘One-third x cubed,’ okay? Don’t worry about what it means, just say ‘one-third x cubed.’ Got that?” The waitress nods, and practices the words as she walks away: “One-third . . . x . . . cubed . . .”

When the first mathematician returns, the second one hails the waitress once more. “Help us out, would you? My friend here doesn’t think that many people know anything about maths. So let me just ask you, what’s the integral of x squared?”

“One-third x cubed,” she announces proudly. The first mathematician is impressed, and admits that his friend might be right after all.

As the waitress walks away, she looks back with a smile and adds, “Plus a constant.”

APPENDIX B: CONNECTIONS AND CURVATURE

In our discussion of geometry in [Chapter 7](#), we covered all of the ideas necessary to understand the concepts of geodesics and Einstein’s equation. But we didn’t include absolutely all of the steps that would be necessary to calculate such things for a given metric. Here we fill in the gaps. We’ll use Greek indices rather than Latin, imagining that we are in four-dimensional spacetime, but the formulas work equally well in space or in some other number of dimensions.

While working our way toward Einstein’s equation in [Chapter 8](#), we had to define the Ricci curvature scalar, which involved the idea of the “inverse metric.” Let’s be a little more explicit about what that means. We start by introducing an extremely useful tensor, the **Kronecker delta**, which has one upper index and one lower one. In four dimensions it looks like

$$\delta^\mu_\nu = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{cases} 1, & \mu = \nu \\ 0, & \mu \neq \nu \end{cases}. \quad (\text{B.1})$$

Thought of as a matrix, the Kronecker delta is just the **identity matrix**. The identity matrix plays the same role in matrix-land that the number 1 plays in ordinary arithmetic. When you multiply any matrix by the identity matrix, you get the original matrix back.

With that understanding, we can think of the inverse metric as the tensor we should multiply the metric by to obtain the Kronecker delta. The metric tensor $g_{\mu\nu}$ is a symmetric tensor with two lower indices, so the inverse metric will be a symmetric tensor with two upper indices, $g^{\rho\sigma}$, which satisfies

$$g^{\mu\lambda} g_{\lambda\nu} = \delta^\mu_\nu. \quad (\text{B.2})$$

We should take a moment to appreciate what's going on with the indices here. There are two kinds of indices in a tensor expression: free indices and dummy indices. Dummy indices are the ones that appear twice, once upstairs and once downstairs, and are thus summed over, as with λ in (B.2). It doesn't matter what letter we use for them, as long as it's the same one, and there must be precisely one upper and one lower dummy index. (You can't sum over repeated indices that are both upper or both lower.) Free indices, on the other hand, appear only once in each expression, as with μ and ν in (B.2). The letters we choose to represent free indices also don't matter, but it is crucially important that they match up—each term (that is, each product of tensors) in any equation must have the same free indices. We see that in (B.2), where both the left-hand side and the right-hand side of the equation have an upper μ and a lower ν as free indices. If you are

trying to add together tensor expressions with mismatched free indices, something has gone terribly wrong.

Ordinary Euclidean geometry implicitly uses a metric, they just don't tell you about it. The dot product between two three-dimensional Euclidean vectors, for example, is $\vec{v} \cdot \vec{w} = g_{ij} v^i w^j$. But the components of that flat Euclidean metric (in Cartesian coordinates) are

$$g_{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}. \quad (\text{B.3})$$

Comparing to (the three-dimensional versions of) (B.1) and (B.2), the components of the inverse metric look precisely the same:

$$g^{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}. \quad (\text{B.4})$$

This is why you may very well have experienced entire high school-level courses on geometry without ever hearing the word “metric.” It was there, but it was always implied rather than spelled out explicitly, because you stuck with flat space in Cartesian coordinates and the components of the metric, inverse metric, and Kronecker delta were all the same.

That won't be true in general; components of the inverse metric are not typically the same as those of the metric. If the metric is diagonal, we're in the happy situation where the components of the inverse metric are simply the reciprocals of the metric components. (If the metric is not diagonal, things get messy quickly.) For example, in flat Euclidean three-dimensional space in spherical coordinates, the metric looks like

$$g_{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & r^2 & 0 \\ 0 & 0 & r^2 (\sin \theta)^2 \end{pmatrix}. \quad (\text{B.5})$$

This implies that the inverse metric has components

$$g^{ij} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & r^{-2} & 0 \\ 0 & 0 & r^{-2} (\sin \theta)^{-2} \end{pmatrix}. \quad (\text{B.6})$$

In flat space we at least have the option of using Cartesian coordinates where the metric and inverse metric are essentially the same, but in more general situations there is no such option, so it is important to keep the concepts distinct.

The presence of the metric and inverse metric enables a cute kind of tensor manipulation: **raising and lowering indices**. Whether a given index slot is a subscript or superscript matters, as the example of the metric itself shows. But we can turn an upper index into a lower one by multiplying by the metric and summing over that index, and likewise we can turn a lower index into an upper one with the inverse metric. Given a vector v^μ , for example, we can lower its index via

$$v_\mu = g_{\mu\nu} v^\nu. \quad (\text{B.7})$$

The fact that the inverse metric satisfies (B.2) guarantees that we can lower an index then raise it again, returning to the same tensor that we started with (because summing over is the same as not doing anything at all):

$$g^{\mu\lambda} v_\lambda = g^{\mu\lambda} g_{\lambda\nu} v^\nu = \delta^\mu_\nu v^\nu = v^\mu. \quad (\text{B.8})$$

It's this bit of tensor technology that was necessary to define the Ricci curvature scalar in [Chapter 8](#). The Riemann tensor is naturally equipped with a single upper index and three lower ones, so it's straightforward to “contract” (sum over) one index to define the Ricci tensor, $R_{\mu\nu} = R^\lambda_{\mu\lambda\nu}$. But then we're stuck with a tensor with two lower indices; we can't do another contraction to get a scalar. What we can do is to raise an index using the inverse metric, $R^\mu_\nu = g^{\mu\lambda} R_{\lambda\nu}$. Then that can be contracted to define the curvature scalar, $R = R^\lambda_\lambda$, or equivalently $R = g^{\lambda\sigma} R_{\lambda\sigma}$. Then, if you're Einstein, you can put this to work defining a tensor that can be proportional to the energy-momentum tensor and still preserve energy conservation.

There's also a secret index-raising that was crucial along the way to defining the Riemann tensor in the first place. A central role was played by parallel-transporting a vector W^μ along a parameterized path $x^\mu(\lambda)$. (Despite being a Greek letter, λ here is not an index, it's the parameter telling us where we are along the path.) That means we have to define a value of the vector at each point, $W^\mu(\lambda)$, that satisfies the **equation of parallel transport**:

$$\frac{d}{d\lambda} W^\mu + \Gamma^\mu_{\sigma\rho} \frac{dx^\sigma}{d\lambda} W^\rho = 0. \quad (\text{B.9})$$

Most of the notation here makes sense, but we need to define $\Gamma^\mu_{\sigma\rho}$. These are known as **connection coefficients** or **Christoffel symbols**. They sure look like components of a tensor, but strictly speaking they are not, so we call them “coefficients” or just “symbols.” (The reason is that they depend on coordinates in a non-tensorial way.) These coefficients define what we mean in practice by the **connection** on a manifold, the information we need to compare vectors and tensors at nearby points. The idea of a connection also plays an important role in gauge theories in particle physics.

To define the connection coefficients, we introduce yet more notation, but this time it's simply a labor-saving device rather than a novel conceptual twist. In the study of tensor fields on manifolds, it is extremely common to take partial derivatives with respect to the coordinates x^μ . So common that we invent a slick notation for just this purpose:

$$\frac{\partial}{\partial x^\mu} = \partial_\mu. \quad (\text{B.10})$$

You see the trickery: x^μ has an upper index, but in the partial derivative it appears in the denominator, so the partial derivative operator ∂_μ comes with a lower index.

Now that we understand both the inverse metric and the partial-derivative notation, we can present the formula for the connection coefficients:

$$\Gamma^\rho{}_{\mu\nu} = \frac{1}{2} g^{\rho\lambda} (\partial_\mu g_{\nu\lambda} + \partial_\nu g_{\lambda\mu} - \partial_\lambda g_{\mu\nu}). \quad (\text{B.11})$$

Chances are good that as you are reading this, somewhere in the world there are students learning general relativity who are calculating connection coefficients for some given metric using this equation. You're welcome to give it a go; using the flat metric in spherical coordinates (B.5) is hard enough to be interesting while still being tractable. Since there are three indices on $\Gamma^\rho{}_{\mu\nu}$, in three dimensions, that corresponds to $3^3 = 27$ components. But with a diagonal metric that only depends on two of the coordinates, many of those are going to end up being zero. Just keep in mind all the indices being summed over.

The connection coefficients define how parallel transport works, and therefore they also define geodesics, which after all are just paths that parallel-transport their own velocity vectors $dx^\mu/d\lambda$. Substituting this in for W^μ in (B.9), we obtain the **geodesic equation**:

$$\frac{d^2 x^\mu}{d\lambda^2} + \Gamma^\mu_{\rho\sigma} \frac{dx^\rho}{d\lambda} \frac{dx^\sigma}{d\lambda} = 0. \quad (\text{B.12})$$

Given some metric $g_{\mu\nu}$, we can calculate the connection coefficients from (B.11), then use this equation to solve for geodesics $x^\mu(\lambda)$. That will tell us how real physical objects, from planets to photons, travel freely through such a spacetime.

Finally, the other important use of the connection coefficients is to define the Riemann curvature tensor. We explained it conceptually in [Chapter 7](#), but at some point you're going to have to sit down and calculate the components. Here is the formula in all its glory:

$$R^\rho_{\sigma\mu\nu} = \partial_\mu \Gamma^\rho_{\nu\sigma} - \partial_\nu \Gamma^\rho_{\mu\sigma} + \Gamma^\rho_{\mu\lambda} \Gamma^\lambda_{\nu\sigma} - \Gamma^\rho_{\nu\lambda} \Gamma^\lambda_{\mu\sigma}. \quad (\text{B.13})$$

The truth is that kids these days don't usually calculate the components of the Riemann tensor by hand. There are computer programs that will do it for you. They will never know the formative experience of spending late nights with pages of note paper scattered across a kitchen table, filled with Greek symbols, chasing down the step in which you mistakenly wrote μ instead of ν . Good times.

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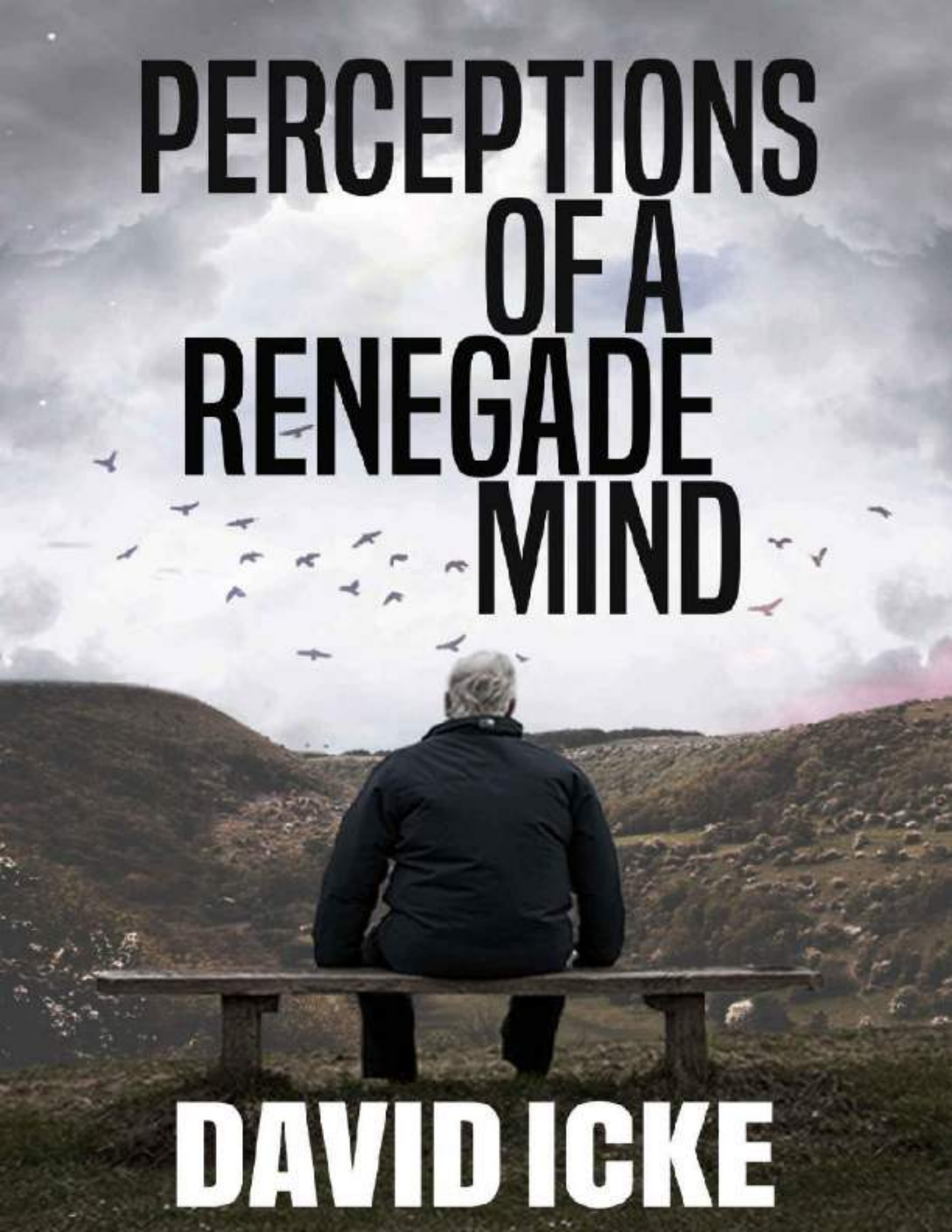
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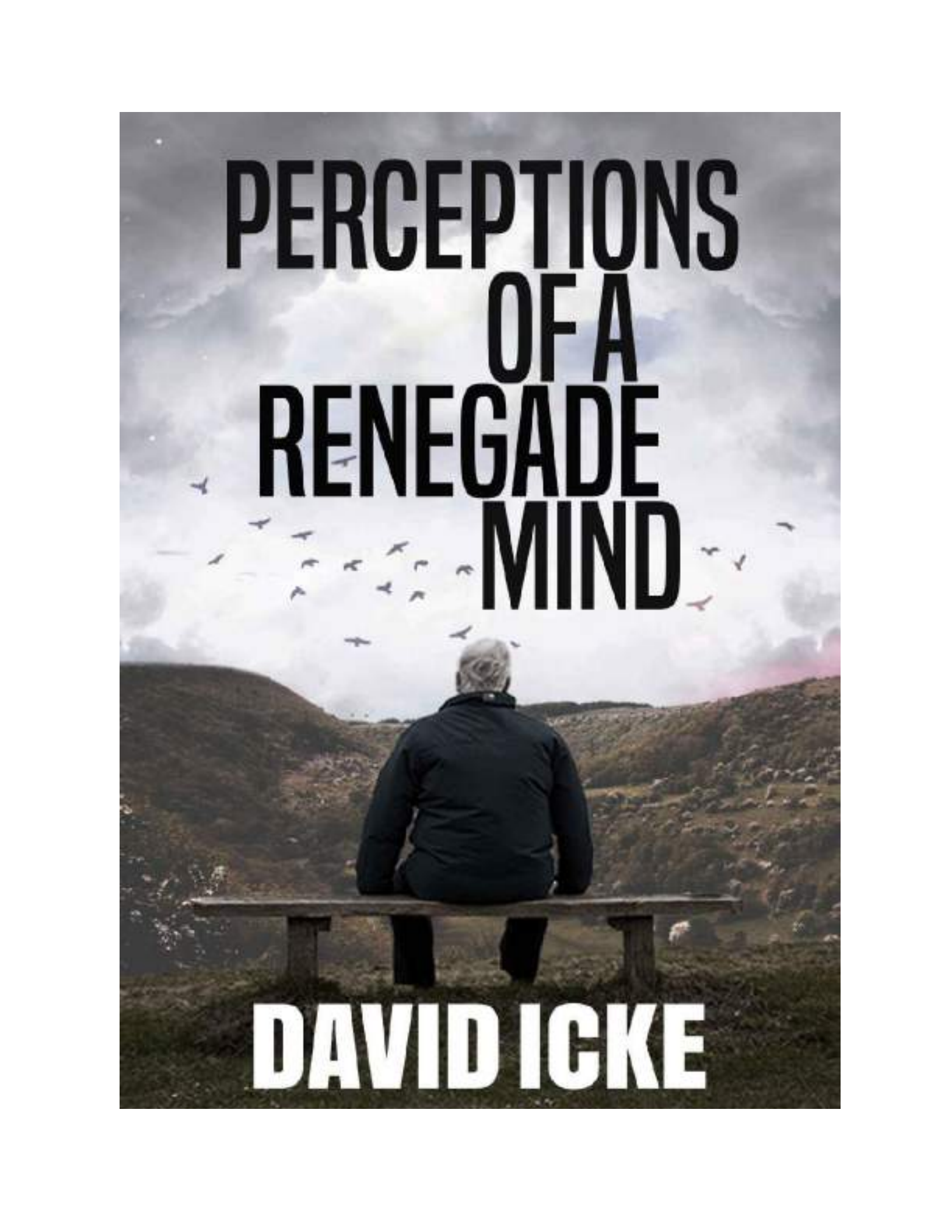
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A person with grey hair, wearing a dark jacket, is seen from behind, sitting on a wooden bench. They are looking out over a landscape of rolling hills covered in low-lying vegetation. The sky is filled with large, white, fluffy clouds, and a large flock of birds is flying in the air. The overall mood is contemplative and serene.

PERCEPTIONS OF A RENEGADE MIND

DAVID ICKE



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DAVID ICKE

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Renegade:

Adjective

‘Having rejected tradition: Unconventional.’

Merriam-Webster Dictionary

Acquiescence to tyranny is the death of the spirit

You may be 38 years old, as I happen to be. And one day, some great opportunity stands before you and calls you to stand up for some great principle, some great issue, some great cause. And you refuse to do it because you are afraid ... You refuse to do it because you want to live longer ... You're afraid that you will lose your job, or you are afraid that you will be criticised or that you will lose your popularity, or you're afraid that somebody will stab you, or shoot at you or bomb your house; so you refuse to take the stand.

Well, you may go on and live until you are 90, but you're just as dead at 38 as you would be at 90. And the cessation of breathing in your life is but the belated announcement of an earlier death of the spirit.

Martin Luther King

**How the few control the many and always have – the many do
whatever they're told**

'Forward, the Light Brigade!'
Was there a man dismayed?
Not though the soldier knew
Someone had blundered.
Theirs not to make reply,
Theirs not to reason why,
Theirs but to do and die.
Into the valley of Death
Rode the six hundred.

Cannon to right of them,
Cannon to left of them,
Cannon in front of them
Volleyed and thundered;
Stormed at with shot and shell,
Boldly they rode and well,
Into the jaws of Death,
Into the mouth of hell
Rode the six hundred

Alfred Lord Tennyson (1809-1892)

The mist is lifting slowly
I can see the way ahead
And I've left behind the empty streets
That once inspired my life
And the strength of the emotion
Is like thunder in the air
'Cos the promise that we made each other
Haunts me to the end

The secret of your beauty
And the mystery of your soul
I've been searching for in everyone I meet
And the times I've been mistaken
It's impossible to say
And the grass is growing
Underneath our feet

The words that I remember
From my childhood still are true
That there's none so blind
As those who will not see
And to those who lack the courage
And say it's dangerous to try
Well they just don't know
That love eternal will not be denied

I know you're out there somewhere
Somewhere, somewhere
I know you're out there somewhere

Somewhere you can hear my voice
I know I'll find you somehow
Somehow, somehow
I know I'll find you somehow
And somehow I'll return again to you

The Moody Blues

Are you a gutless wonder - or a Renegade Mind?

Monuments put from pen to paper,
Turns me into a gutless wonder,
And if you tolerate this,
Then your children will be next.
Gravity keeps my head down,
Or is it maybe shame ...

Manic Street Preachers

Rise like lions after slumber
In unvanquishable number.
Shake your chains to earth like dew
Which in sleep have fallen on you.
Ye are many – they are few.

Percy Shelley

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CHAPTER ONE

I'm thinking' – Oh, but *are* you?

Think for yourself and let others enjoy the privilege of doing so too
Voltaire

French-born philosopher, mathematician and scientist René Descartes became famous for his statement in Latin in the 17th century which translates into English as: 'I think, therefore I am.'

On the face of it that is true. Thought reflects perception and perception leads to both behaviour and self-identity. In that sense 'we' are what we think. But who or what is doing the thinking and is thinking the only route to perception? Clearly, as we shall see, 'we' are not always the source of 'our' perception, indeed with regard to humanity as a whole this is rarely the case; and thinking is far from the only means of perception. Thought is the village idiot compared with other expressions of consciousness that we all have the potential to access and tap into. This has to be true when we *are* those other expressions of consciousness which are infinite in nature. We have forgotten this, or, more to the point, been manipulated to forget.

These are not just the esoteric musings of the navel. The whole foundation of human control and oppression is control of perception. Once perception is hijacked then so is behaviour which is dictated by perception. Collective perception becomes collective behaviour and collective behaviour is what we call human society. Perception is all and those behind human control know that which is

why perception is the target 24/7 of the psychopathic manipulators that I call the Global Cult. They know that if they dictate perception they will dictate behaviour and collectively dictate the nature of human society. They are further aware that perception is formed from information received and if they control the circulation of information they will to a vast extent direct human behaviour. Censorship of information and opinion has become globally Nazi-like in recent years and never more blatantly than since the illusory 'virus pandemic' was triggered out of China in 2019 and across the world in 2020. Why have billions submitted to house arrest and accepted fascistic societies in a way they would have never believed possible? Those controlling the information spewing from government, mainstream media and Silicon Valley (all controlled by the same Global Cult networks) told them they were in danger from a 'deadly virus' and only by submitting to house arrest and conceding their most basic of freedoms could they and their families be protected. This monumental and provable lie became the *perception* of the billions and therefore the *behaviour* of the billions. In those few words you have the whole structure and modus operandi of human control. Fear is a perception – False Emotion Appearing Real – and fear is the currency of control. In short ... get them by the balls (or give them the impression that you have) and their hearts and minds will follow. Nothing grips the dangly bits and freezes the rear-end more comprehensively than fear.

World number 1

There are two 'worlds' in what appears to be one 'world' and the prime difference between them is knowledge. First we have the mass of human society in which the population is maintained in coldly-calculated ignorance through control of information and the 'education' (indoctrination) system. That's all you really need to control to enslave billions in a perceptual delusion in which what are perceived to be *their* thoughts and opinions are ever-repeated mantras that the system has been downloading all their lives through 'education', media, science, medicine, politics and academia

in which the personnel and advocates are themselves overwhelmingly the perceptual products of the same repetition. Teachers and academics in general are processed by the same programming machine as everyone else, but unlike the great majority they never leave the 'education' program. It gripped them as students and continues to grip them as programmers of subsequent generations of students. The programmed become the programmers – the programmed programmers. The same can largely be said for scientists, doctors and politicians and not least because as the American writer Upton Sinclair said: 'It is difficult to get a man to understand something when his salary depends upon his not understanding it.' If your career and income depend on thinking the way the system demands then you will – bar a few free-minded exceptions – concede your mind to the Perceptual Mainframe that I call the Postage Stamp Consensus. This is a tiny band of perceived knowledge and possibility 'taught' (downloaded) in the schools and universities, pounded out by the mainstream media and on which all government policy is founded. Try thinking, and especially speaking and acting, outside of the 'box' of consensus and see what that does for your career in the Mainstream Everything which bullies, harasses, intimidates and ridicules the population into compliance. Here we have the simple structure which enslaves most of humanity in a perceptual prison cell for an entire lifetime and I'll go deeper into this process shortly. Most of what humanity is taught as fact is nothing more than programmed belief. American science fiction author Frank Herbert was right when he said: 'Belief can be manipulated. Only knowledge is dangerous.' In the 'Covid' age belief is promoted and knowledge is censored. It was always so, but never to the extreme of today.

World number 2

A 'number 2' is slang for 'doing a poo' and how appropriate that is when this other 'world' is doing just that on humanity every minute of every day. World number 2 is a global network of secret societies and semi-secret groups dictating the direction of society via

governments, corporations and authorities of every kind. I have spent more than 30 years uncovering and exposing this network that I call the Global Cult and knowing its agenda is what has made my books so accurate in predicting current and past events. Secret societies are secret for a reason. They want to keep their hoarded knowledge to themselves and their chosen initiates and to hide it from the population which they seek through ignorance to control and subdue. The whole foundation of the division between World 1 and World 2 is *knowledge*. What number 1 knows number 2 must not. Knowledge they have worked so hard to keep secret includes (a) the agenda to enslave humanity in a centrally-controlled global dictatorship, and (b) the nature of reality and life itself. The latter (b) must be suppressed to allow the former (a) to prevail as I shall be explaining. The way the Cult manipulates and interacts with the population can be likened to a spider's web. The 'spider' sits at the centre in the shadows and imposes its will through the web with each strand represented in World number 2 by a secret society, satanic or semi-secret group, and in World number 1 – the world of the seen – by governments, agencies of government, law enforcement, corporations, the banking system, media conglomerates and Silicon Valley ([Fig 1](#) overleaf). The spider and the web connect and coordinate all these organisations to pursue the same global outcome while the population sees them as individual entities working randomly and independently. At the level of the web governments *are* the banking system *are* the corporations *are* the media *are* Silicon Valley *are* the World Health Organization working from their inner cores as one unit. Apparently unconnected countries, corporations, institutions, organisations and people are on the *same team* pursuing the same global outcome. Strands in the web immediately around the spider are the most secretive and exclusive secret societies and their membership is emphatically restricted to the Cult inner-circle emerging through the generations from particular bloodlines for reasons I will come to. At the core of the core you would get them in a single room. That's how many people are dictating the direction of human society and its transformation

through the 'Covid' hoax and other means. As the web expands out from the spider we meet the secret societies that many people will be aware of – the Freemasons, Knights Templar, Knights of Malta, Opus Dei, the inner sanctum of the Jesuit Order, and such like. Note how many are connected to the Church of Rome and there is a reason for that. The Roman Church was established as a revamp, a rebranding, of the relocated 'Church' of Babylon and the Cult imposing global tyranny today can be tracked back to Babylon and Sumer in what is now Iraq.



Figure 1: The global web through which the few control the many. (Image Neil Hague.)

Inner levels of the web operate in the unseen away from the public eye and then we have what I call the cusp organisations located at the point where the hidden meets the seen. They include a series of satellite organisations answering to a secret society founded in London in the late 19th century called the Round Table and among them are the Royal Institute of International Affairs (UK, founded in 1920); Council on Foreign Relations (US, 1921); Bilderberg Group (worldwide, 1954); Trilateral Commission (US/worldwide, 1972); and the Club of Rome (worldwide, 1968) which was created to exploit environmental concerns to justify the centralisation of global power to 'save the planet'. The Club of Rome instigated with others the human-caused climate change hoax which has led to all the 'green

new deals' demanding that very centralisation of control. Cusp organisations, which include endless 'think tanks' all over the world, are designed to coordinate a single global policy between political and business leaders, intelligence personnel, media organisations and anyone who can influence the direction of policy in their own sphere of operation. Major players and regular attenders will know what is happening – or some of it – while others come and go and are kept overwhelmingly in the dark about the big picture. I refer to these cusp groupings as semi-secret in that they can be publicly identified, but what goes on at the inner-core is kept very much 'in house' even from most of their members and participants through a fiercely-imposed system of compartmentalisation. Only let them know what they need to know to serve your interests and no more. The structure of secret societies serves as a perfect example of this principle. Most Freemasons never get higher than the bottom three levels of 'degree' (degree of knowledge) when there are 33 official degrees of the Scottish Rite. Initiates only qualify for the next higher 'compartment' or degree if those at that level choose to allow them. Knowledge can be carefully assigned only to those considered 'safe'. I went to my local Freemason's lodge a few years ago when they were having an 'open day' to show how cuddly they were and when I chatted to some of them I was astonished at how little the rank and file knew even about the most ubiquitous symbols they use. The mushroom technique – keep them in the dark and feed them bullshit – applies to most people in the web as well as the population as a whole. Sub-divisions of the web mirror in theme and structure transnational corporations which have a headquarters somewhere in the world dictating to all their subsidiaries in different countries. Subsidiaries operate in their methodology and branding to the same centrally-dictated plan and policy in pursuit of particular ends. The Cult web functions in the same way. Each country has its own web as a subsidiary of the global one. They consist of networks of secret societies, semi-secret groups and bloodline families and their job is to impose the will of the spider and the global web in their particular country. Subsidiary networks control and manipulate the national political system, finance, corporations, media, medicine, etc. to

ensure that they follow the globally-dictated Cult agenda. These networks were the means through which the 'Covid' hoax could be played out with almost every country responding in the same way.

The 'Yessir' pyramid

Compartmentalisation is the key to understanding how a tiny few can dictate the lives of billions when combined with a top-down sequence of imposition and acquiescence. The inner core of the Cult sits at the peak of the pyramidal hierarchy of human society (Fig 2 overleaf). It imposes its will – its agenda for the world – on the level immediately below which acquiesces to that imposition. This level then imposes the Cult will on the level below them which acquiesces and imposes on the next level. Very quickly we meet levels in the hierarchy that have no idea there even is a Cult, but the sequence of imposition and acquiescence continues down the pyramid in just the same way. 'I don't know why we are doing this but the order came from "on-high" and so we better just do it.' Alfred Lord Tennyson said of the cannon fodder levels in his poem *The Charge of the Light Brigade*: 'Theirs not to reason why; theirs but to do and die.' The next line says that 'into the valley of death rode the six hundred' and they died because they obeyed without question what their perceived 'superiors' told them to do. In the same way the population capitulated to 'Covid'. The whole hierarchical pyramid functions like this to allow the very few to direct the enormous many.

Eventually imposition-acquiescence-imposition-acquiescence comes down to the mass of the population at the foot of the pyramid. If they acquiesce to those levels of the hierarchy imposing on them (governments/law enforcement/doctors/media) a circuit is completed between the population and the handful of super-psychopaths in the Cult inner core at the top of the pyramid.

Without a circuit-breaking refusal to obey, the sequence of imposition and acquiescence allows a staggeringly few people to impose their will upon the entirety of humankind. We are looking at the very sequence that has subjugated billions since the start of 2020. Our freedom has not been taken from us. Humanity has given it

away. Fascists do not impose fascism because there are not enough of them. Fascism is imposed by the population acquiescing to fascism. Put another way allowing their perceptions to be programmed to the extent that leads to the population giving their freedom away by giving their perceptions – their mind – away. If this circuit is not broken by humanity ceasing to cooperate with their own enslavement then nothing can change. For that to happen people have to critically think and see through the lies and window dressing and then summon the backbone to act upon what they see. The Cult spends its days working to stop either happening and its methodology is systematic and highly detailed, but it can be overcome and that is what this book is all about.

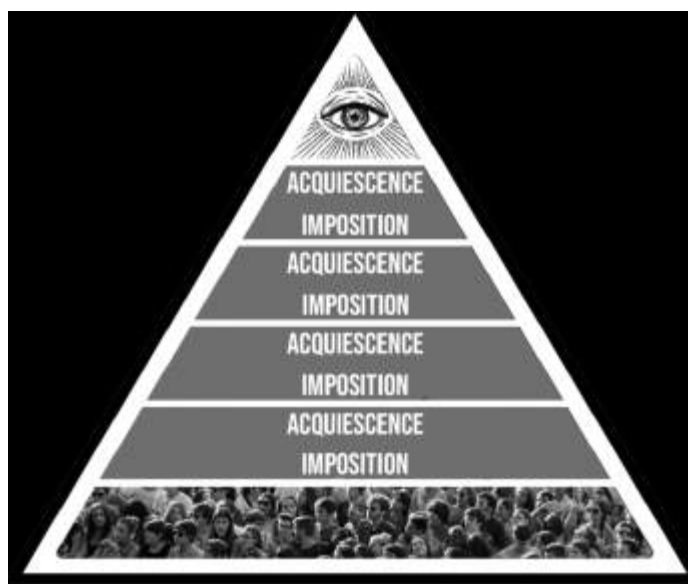


Figure 2: The simple sequence of imposition and compliance that allows a handful of people at the peak of the pyramid to dictate the lives of billions.

The Life Program

Okay, back to world number 1 or the world of the 'masses'. Observe the process of what we call 'life' and it is a perceptual download from cradle to grave. The Cult has created a global structure in which perception can be programmed and the program continually topped-up with what appears to be constant confirmation that the program is indeed true reality. The important word here is 'appears'.

This is the structure, the fly-trap, the Postage Stamp Consensus or Perceptual Mainframe, which represents that incredibly narrow band of perceived possibility delivered by the 'education' system, mainstream media, science and medicine. From the earliest age the download begins with parents who have themselves succumbed to the very programming their children are about to go through. Most parents don't do this out of malevolence and mostly it is quite the opposite. They do what they believe is best for their children and that is what the program has told them is best. Within three or four years comes the major transition from parental programming to full-blown state (Cult) programming in school, college and university where perceptually-programmed teachers and academics pass on their programming to the next generations. Teachers who resist are soon marginalised and their careers ended while children who resist are called a problem child for whom Ritalin may need to be prescribed. A few years after entering the 'world' children are under the control of authority figures representing the state telling them when they have to be there, when they can leave and when they can speak, eat, even go to the toilet. This is calculated preparation for a lifetime of obeying authority in all its forms. Reflex-action fear of authority is instilled by authority from the start. Children soon learn the carrot and stick consequences of obeying or defying authority which is underpinned daily for the rest of their life. Fortunately I daydreamed through this crap and never obeyed authority simply because it told me to. This approach to my alleged 'betters' continues to this day. There can be consequences of pursuing open-minded freedom in a world of closed-minded conformity. I spent a lot of time in school corridors after being ejected from the classroom for not taking some of it seriously and now I spend a lot of time being ejected from Facebook, YouTube and Twitter. But I can tell you that being true to yourself and not compromising your self-respect is far more exhilarating than bowing to authority for authority's sake. You don't have to be a sheep to the shepherd (authority) and the sheep dog (fear of not obeying authority).

The perceptual download continues throughout the formative years in school, college and university while script-reading 'teachers', 'academics' 'scientists', 'doctors' and 'journalists' insist that ongoing generations must be as programmed as they are. Accept the program or you will not pass your 'exams' which confirm your 'degree' of programming. It is tragic to think that many parents pressure their offspring to work hard at school to download the program and qualify for the next stage at college and university. The late, great, American comedian George Carlin said: 'Here's a bumper sticker I'd like to see: We are proud parents of a child who has resisted his teachers' attempts to break his spirit and bend him to the will of his corporate masters.' Well, the best of luck finding many of those, George. Then comes the moment to leave the formal programming years in academia and enter the 'adult' world of work. There you meet others in your chosen or prescribed arena who went through the same Postage Stamp Consensus program before you did. There is therefore overwhelming agreement between almost everyone on the basic foundations of Postage Stamp reality and the rejection, even contempt, of the few who have a mind of their own and are prepared to use it. This has two major effects. Firstly, the consensus confirms to the programmed that their download is really how things are. I mean, everyone knows that, right? Secondly, the arrogance and ignorance of Postage Stamp adherents ensure that anyone questioning the program will have unpleasant consequences for seeking their own truth and not picking their perceptions from the shelf marked: 'Things you must believe without question and if you don't you're a dangerous lunatic conspiracy theorist and a harebrained nutter'.

Every government, agency and corporation is founded on the same Postage Stamp prison cell and you can see why so many people believe the same thing while calling it their own 'opinion'. Fusion of governments and corporations in pursuit of the same agenda was the definition of fascism described by Italian dictator Benito Mussolini. The pressure to conform to perceptual norms downloaded for a lifetime is incessant and infiltrates society right

down to family groups that become censors and condemners of their own 'black sheep' for not, ironically, being sheep. We have seen an explosion of that in the 'Covid' era. Cult-owned global media unleashes its propaganda all day every day in support of the Postage Stamp and targets with abuse and ridicule anyone in the public eye who won't bend their mind to the will of the tyranny. Any response to this is denied (certainly in my case). They don't want to give a platform to expose official lies. Cult-owned-and-created Internet giants like Facebook, Google, YouTube and Twitter delete you for having an unapproved opinion. Facebook boasts that its AI censors delete 97-percent of 'hate speech' before anyone even reports it. Much of that 'hate speech' will simply be an opinion that Facebook and its masters don't want people to see. Such perceptual oppression is widely known as fascism. Even Facebook executive Benny Thomas, a 'CEO Global Planning Lead', said in comments secretly recorded by investigative journalism operation Project Veritas that Facebook is 'too powerful' and should be broken up:

I mean, no king in history has been the ruler of two billion people, but Mark Zuckerberg is ... And he's 36. That's too much for a 36-year-old ... You should not have power over two billion people. I just think that's wrong.

Thomas said Facebook-owned platforms like Instagram, Oculus, and WhatsApp needed to be separate companies. 'It's too much power when they're all one together'. That's the way the Cult likes it, however. We have an executive of a Cult organisation in Benny Thomas that doesn't know there is a Cult such is the compartmentalisation. Thomas said that Facebook and Google 'are no longer companies, they're countries'. Actually they are more powerful than countries on the basis that if you control information you control perception and control human society.

I love my oppressor

Another expression of this psychological trickery is for those who realise they are being pressured into compliance to eventually

convince themselves to believe the official narratives to protect their self-respect from accepting the truth that they have succumbed to meek and subservient compliance. Such people become some of the most vehement defenders of the system. You can see them everywhere screaming abuse at those who prefer to think for themselves and by doing so reminding the compliers of their own capitulation to conformity. 'You are talking dangerous nonsense you Covidiot!!' Are you trying to convince me or yourself? It is a potent form of Stockholm syndrome which is defined as: 'A psychological condition that occurs when a victim of abuse identifies and attaches, or bonds, positively with their abuser.' An example is hostages bonding and even 'falling in love' with their kidnappers. The syndrome has been observed in domestic violence, abused children, concentration camp inmates, prisoners of war and many and various Satanic cults. These are some traits of Stockholm syndrome listed at goodtherapy.org:

- Positive regard towards perpetrators of abuse or captor [see 'Covid'].
- Failure to cooperate with police and other government authorities when it comes to holding perpetrators of abuse or kidnapping accountable [or in the case of 'Covid' cooperating with the police to enforce and defend their captors' demands].
- Little or no effort to escape [see 'Covid'].
- Belief in the goodness of the perpetrators or kidnappers [see 'Covid'].
- Appeasement of captors. This is a manipulative strategy for maintaining one's safety. As victims get rewarded – perhaps with less abuse or even with life itself – their appeasing behaviours are reinforced [see 'Covid'].
- Learned helplessness. This can be akin to 'if you can't beat 'em, join 'em'. As the victims fail to escape the abuse or captivity, they may start giving up and soon realize it's just easier for everyone if they acquiesce all their power to their captors [see 'Covid'].

- Feelings of pity toward the abusers, believing they are actually victims themselves. Because of this, victims may go on a crusade or mission to 'save' [protect] their abuser [see the venom unleashed on those challenging the official 'Covid' narrative].
- Unwillingness to learn to detach from their perpetrators and heal. In essence, victims may tend to be less loyal to themselves than to their abuser [*definitely* see 'Covid'].

Ponder on those traits and compare them with the behaviour of great swathes of the global population who have defended governments and authorities which have spent every minute destroying their lives and livelihoods and those of their children and grandchildren since early 2020 with fascistic lockdowns, house arrest and employment deletion to 'protect' them from a 'deadly virus' that their abusers' perceptually created to bring about this very outcome. We are looking at mass Stockholm syndrome. All those that agree to concede their freedom will believe those perceptions are originating in their own independent 'mind' when in fact by conceding their reality to Stockholm syndrome they have by definition conceded any independence of mind. Listen to the 'opinions' of the acquiescing masses in this 'Covid' era and what gushes forth is the repetition of the official version of everything delivered unprocessed, unfiltered and unquestioned. The whole programming dynamic works this way. I must be free because I'm told that I am and so I think that I am.

You can see what I mean with the chapter theme of 'I'm thinking – Oh, but *are* you?' The great majority are not thinking, let alone for themselves. They are repeating what authority has told them to believe which allows them to be controlled. Weaving through this mentality is the fear that the 'conspiracy theorists' are right and this again explains the often hysterical abuse that ensues when you dare to contest the official narrative of anything. Denial is the mechanism of hiding from yourself what you don't want to be true. Telling people what they want to hear is easy, but it's an infinitely greater challenge to tell them what they would rather not be happening.

One is akin to pushing against an open door while the other is met with vehement resistance no matter what the scale of evidence. I don't want it to be true so I'll convince myself that it's not. Examples are everywhere from the denial that a partner is cheating despite all the signs to the reflex-action rejection of any idea that world events in which country after country act in exactly the same way are centrally coordinated. To accept the latter is to accept that a force of unspeakable evil is working to destroy your life and the lives of your children with nothing too horrific to achieve that end. Who the heck wants that to be true? But if we don't face reality the end is duly achieved and the consequences are far worse and ongoing than breaking through the walls of denial today with the courage to make a stand against tyranny.

Connect the dots – but how?

A crucial aspect of perceptual programming is to portray a world in which everything is random and almost nothing is connected to anything else. Randomness cannot be coordinated by its very nature and once you perceive events as random the idea they could be connected is waved away as the rantings of the tinfoil-hat brigade. You can't plan and coordinate random you idiot! No, you can't, but you can hide the coldly-calculated and long-planned behind the *illusion* of randomness. A foundation manifestation of the Renegade Mind is to scan reality for patterns that connect the apparently random and turn pixels and dots into pictures. This is the way I work and have done so for more than 30 years. You look for similarities in people, modus operandi and desired outcomes and slowly, then ever quicker, the picture forms. For instance: There would seem to be no connection between the 'Covid pandemic' hoax and the human-caused global-warming hoax and yet they are masks (appropriately) on the same face seeking the same outcome. Those pushing the global warming myth through the Club of Rome and other Cult agencies are driving the lies about 'Covid' – Bill Gates is an obvious one, but they are endless. Why would the same people be involved in both when they are clearly not connected? Oh, but they

are. Common themes with personnel are matched by common goals. The 'solutions' to both 'problems' are centralisation of global power to impose the will of the few on the many to 'save' humanity from 'Covid' and save the planet from an 'existential threat' (we need 'zero Covid' and 'zero carbon emissions'). These, in turn, connect with the 'dot' of globalisation which was coined to describe the centralisation of global power in every area of life through incessant political and corporate expansion, trading blocks and superstates like the European Union. If you are the few and you want to control the many you have to centralise power and decision-making. The more you centralise power the more power the few at the centre will have over the many; and the more that power is centralised the more power those at the centre have to centralise even quicker. The momentum of centralisation gets faster and faster which is exactly the process we have witnessed. In this way the hoaxed 'pandemic' and the fakery of human-caused global warming serve the interests of globalisation and the seizure of global power in the hands of the Cult inner-circle which is behind 'Covid', 'climate change' and globalisation. At this point random 'dots' become a clear and obvious picture or pattern.

Klaus Schwab, the classic Bond villain who founded the Cult's Gates-funded World Economic Forum, published a book in 2020, *The Great Reset*, in which he used the 'problem' of 'Covid' to justify a total transformation of human society to 'save' humanity from 'climate change'. Schwab said: 'The pandemic represents a rare but narrow window of opportunity to reflect, reimagine, and reset our world.' What he didn't mention is that the Cult he serves is behind both hoaxes as I show in my book *The Answer*. He and the Cult don't have to reimagine the world. They know precisely what they want and that's why they destroyed human society with 'Covid' to 'build back better' in their grand design. Their job is not to imagine, but to get humanity to imagine and agree with their plans while believing it's all random. It must be pure coincidence that 'The Great Reset' has long been the Cult's code name for the global imposition of fascism and replaced previous code-names of the 'New World

Order' used by Cult frontmen like Father George Bush and the 'New Order of the Ages' which emerged from Freemasonry and much older secret societies. New Order of the Ages appears on the reverse of the Great Seal of the United States as 'Novus ordo seclorum' underneath the Cult symbol used since way back of the pyramid and all seeing-eye (Fig 3). The pyramid is the hierarchy of human control headed by the illuminated eye that symbolises the force behind the Cult which I will expose in later chapters. The term 'Annuit Coeptis' translates as 'He favours our undertaking'. We are told the 'He' is the Christian god, but 'He' is not as I will be explaining.



Figure 3: The all-seeing eye of the Cult 'god' on the Freemason-designed Great Seal of the United States and also on the dollar bill.

Having you on

Two major Cult techniques of perceptual manipulation that relate to all this are what I have called since the 1990s Problem-Reaction-Solution (PRS) and the Totalitarian Tiptoe (TT). They can be uncovered by the inquiring mind with a simple question: Who benefits? The answer usually identifies the perpetrators of a given action or happening through the concept of 'he who most benefits from a crime is the one most likely to have committed it'. The Latin 'Cue bono?' – Who benefits? – is widely attributed to the Roman orator and statesman Marcus Tullius Cicero. No wonder it goes back so far when the concept has been relevant to human behaviour since

history was recorded. Problem-Reaction-Solution is the technique used to manipulate us every day by covertly creating a problem (or the illusion of one) and offering the solution to the problem (or the illusion of one). In the first phase you create the problem and blame someone or something else for why it has happened. This may relate to a financial collapse, terrorist attack, war, global warming or pandemic, anything in fact that will allow you to impose the 'solution' to change society in the way you desire at that time. The 'problem' doesn't have to be real. PRS is manipulation of perception and all you need is the population to believe the problem is real. Human-caused global warming and the 'Covid pandemic' only have to be *perceived* to be real for the population to accept the 'solutions' of authority. I refer to this technique as NO-Problem-Reaction-Solution. Billions did not meekly accept house arrest from early 2020 because there was a real deadly 'Covid pandemic' but because they perceived – believed – that to be the case. The antidote to Problem-Reaction-Solution is to ask who benefits from the proposed solution. Invariably it will be anyone who wants to justify more control through deletion of freedom and centralisation of power and decision-making.

The two world wars were Problem-Reaction-Solutions that transformed and realigned global society. Both were manipulated into being by the Cult as I have detailed in books since the mid-1990s. They dramatically centralised global power, especially World War Two, which led to the United Nations and other global bodies thanks to the overt and covert manipulations of the Rockefeller family and other Cult bloodlines like the Rothschilds. The UN is a stalking horse for full-blown world government that I will come to shortly. The land on which the UN building stands in New York was donated by the Rockefellers and the same Cult family was behind Big Pharma scalpel and drug 'medicine' and the creation of the World Health Organization as part of the UN. They have been stalwarts of the eugenics movement and funded Hitler's race-purity expert' Ernst Rudin. The human-caused global warming hoax has been orchestrated by the Club of Rome through the UN which is

manufacturing both the 'problem' through its Intergovernmental Panel on Climate Change and imposing the 'solution' through its Agenda 21 and Agenda 2030 which demand the total centralisation of global power to 'save the world' from a climate hoax the United Nations is itself perpetrating. What a small world the Cult can be seen to be particularly among the inner circles. The bedfellow of Problem-Reaction-Solution is the Totalitarian Tiptoe which became the Totalitarian Sprint in 2020. The technique is fashioned to hide the carefully-coordinated behind the cover of apparently random events. You start the sequence at 'A' and you know you are heading for 'Z'. You don't want people to know that and each step on the journey is presented as a random happening while all the steps strung together lead in the same direction. The speed may have quickened dramatically in recent times, but you can still see the incremental approach of the Tiptoe in the case of 'Covid' as each new imposition takes us deeper into fascism. Tell people they have to do this or that to get back to 'normal', then this and this and this. With each new demand adding to the ones that went before the population's freedom is deleted until it disappears. The spider wraps its web around the flies more comprehensively with each new diktat. I'll highlight this in more detail when I get to the 'Covid' hoax and how it has been pulled off. Another prime example of the Totalitarian Tiptoe is how the Cult-created European Union went from a 'free-trade zone' to a centralised bureaucratic dictatorship through the Tiptoe of incremental centralisation of power until nations became mere administrative units for Cult-owned dark suits in Brussels.

The antidote to ignorance is knowledge which the Cult seeks vehemently to deny us, but despite the systematic censorship to that end the Renegade Mind can overcome this by vociferously seeking out the facts no matter the impediments put in the way. There is also a method of thinking and perceiving – *knowing* – that doesn't even need names, dates, place-type facts to identify the patterns that reveal the story. I'll get to that in the final chapter. All you need to know about the manipulation of human society and to what end is still out there – *at the time of writing* – in the form of books, videos

and websites for those that really want to breach the walls of programmed perception. To access this knowledge requires the abandonment of the mainstream media as a source of information in the awareness that this is owned and controlled by the Cult and therefore promotes mass perceptions that suit the Cult. Mainstream media lies all day, every day. That is its function and very reason for being. Where it does tell the truth, here and there, is only because the truth and the Cult agenda very occasionally coincide. If you look for fact and insight to the BBC, CNN and virtually all the rest of them you are asking to be conned and perceptually programmed.

Know the outcome and you'll see the journey

Events seem random when you have no idea where the world is being taken. Once you do the random becomes the carefully planned. Know the outcome and you'll see the journey is a phrase I have been using for a long time to give context to daily happenings that appear unconnected. Does a problem, or illusion of a problem, trigger a proposed 'solution' that further drives society in the direction of the outcome? Invariably the answer will be yes and the random – *abracadabra* – becomes the clearly coordinated. So what is this outcome that unlocks the door to a massively expanded understanding of daily events? I will summarise its major aspects – the fine detail is in my other books – and those new to this information will see that the world they thought they were living in is a very different place. The foundation of the Cult agenda is the incessant centralisation of power and all such centralisation is ultimately in pursuit of Cult control on a global level. I have described for a long time the planned world structure of top-down dictatorship as the Hunger Games Society. The term obviously comes from the movie series which portrayed a world in which a few living in military-protected hi-tech luxury were the overlords of a population condemned to abject poverty in isolated 'sectors' that were not allowed to interact. 'Covid' lockdowns and travel bans anyone? The 'Hunger Games' pyramid of structural control has the inner circle of the Cult at the top with pretty much the entire

population at the bottom under their control through dependency for survival on the Cult. The whole structure is planned to be protected and enforced by a military-police state ([Fig 4](#)).

Here you have the reason for the global lockdowns of the fake pandemic to coldly destroy independent incomes and livelihoods and make everyone dependent on the 'state' (the Cult that controls the 'states'). I have warned in my books for many years about the plan to introduce a 'guaranteed income' – a barely survivable pittance – designed to impose dependency when employment was destroyed by AI technology and now even more comprehensively at great speed by the 'Covid' scam. Once the pandemic was played and lockdown consequences began to delete independent income the authorities began to talk right on cue about the need for a guaranteed income and a 'Great Reset'. Guaranteed income will be presented as benevolent governments seeking to help a desperate people – desperate as a direct result of actions of the same governments. The truth is that such payments are a trap. You will only get them if you do exactly what the authorities demand including mass vaccination (genetic manipulation). We have seen this theme already in Australia where those dependent on government benefits have them reduced if parents don't agree to have their children vaccinated according to an insane health-destroying government-dictated schedule. Calculated economic collapse applies to governments as well as people. The Cult wants rid of countries through the creation of a world state with countries broken up into regions ruled by a world government and super states like the European Union. Countries must be bankrupted, too, to this end and it's being achieved by the trillions in 'rescue packages' and furlough payments, trillions in lost taxation, and money-no-object spending on 'Covid' including constant all-medium advertising (programming) which has made the media dependent on government for much of its income. The day of reckoning is coming – as planned – for government spending and given that it has been made possible by printing money and not by production/taxation there is inflation on the way that has the

potential to wipe out monetary value. In that case there will be no need for the Cult to steal your money. It just won't be worth anything (see the German Weimar Republic before the Nazis took over). Many have been okay with lockdowns while getting a percentage of their income from so-called furlough payments without having to work. Those payments are dependent, however, on people having at least a theoretical job with a business considered non-essential and ordered to close. As these business go under because they are closed by lockdown after lockdown the furlough stops and it will for everyone eventually. Then what? The 'then what?' is precisely the idea.



Figure 4: The Hunger Games Society structure I have long warned was planned and now the 'Covid' hoax has made it possible. This is the real reason for lockdowns.

Hired hands

Between the Hunger Games Cult elite and the dependent population is planned to be a vicious military-police state (a fusion of the two into one force). This has been in the making for a long time with police looking ever more like the military and carrying weapons to match. The pandemic scam has seen this process accelerate so fast as

lockdown house arrest is brutally enforced by carefully recruited fascist minds and gormless system-servers. The police and military are planned to merge into a centrally-directed world army in a global structure headed by a world government which wouldn't be elected even by the election fixes now in place. The world army is not planned even to be human and instead wars would be fought, primarily against the population, using robot technology controlled by artificial intelligence. I have been warning about this for decades and now militaries around the world are being transformed by this very AI technology. The global regime that I describe is a particular form of fascism known as a technocracy in which decisions are not made by clueless and co-opted politicians but by unelected technocrats – scientists, engineers, technologists and bureaucrats. Cult-owned-and-controlled Silicon Valley giants are examples of technocracy and they already have far more power to direct world events than governments. They are with their censorship *selecting* governments. I know that some are calling the 'Great Reset' a Marxist communist takeover, but fascism and Marxism are different labels for the same tyranny. Tell those who lived in fascist Germany and Stalinist Russia that there was a difference in the way their freedom was deleted and their lives controlled. I could call it a fascist technocracy or a Marxist technocracy and they would be equally accurate. The Hunger Games society with its world government structure would oversee a world army, world central bank and single world cashless currency imposing its will on a microchipped population ([Fig 5](#)). Scan its different elements and see how the illusory pandemic is forcing society in this very direction at great speed. Leaders of 23 countries and the World Health Organization (WHO) backed the idea in March, 2021, of a global treaty for 'international cooperation' in 'health emergencies' and nations should 'come together as a global community for peaceful cooperation that extends beyond this crisis'. Cut the Orwellian bullshit and this means another step towards global government. The plan includes a cashless digital money system that I first warned about in 1993. Right at the start of 'Covid' the deeply corrupt Tedros

Adhanom Ghebreyesus, the crooked and merely gofer 'head' of the World Health Organization, said it was possible to catch the 'virus' by touching cash and it was better to use cashless means. The claim was ridiculous nonsense and like the whole 'Covid' mind-trick it was nothing to do with 'health' and everything to do with pushing every aspect of the Cult agenda. As a result of the Tedros lie the use of cash has plummeted. The Cult script involves a single world digital currency that would eventually be technologically embedded in the body. China is a massive global centre for the Cult and if you watch what is happening there you will know what is planned for everywhere. The Chinese government is developing a digital currency which would allow fines to be deducted immediately via AI for anyone caught on camera breaking its fantastic list of laws and the money is going to be programmable with an expiry date to ensure that no one can accrue wealth except the Cult and its operatives.



Figure 5: The structure of global control the Cult has been working towards for so long and this has been enormously advanced by the 'Covid' illusion.

Serfdom is so smart

The Cult plan is far wider, extreme, and more comprehensive than even most conspiracy researchers appreciate and I will come to the true depths of deceit and control in the chapters 'Who controls the

Cult?’ and ‘Escaping Wetiko’. Even the world that we know is crazy enough. We are being deluged with ever more sophisticated and controlling technology under the heading of ‘smart’. We have smart televisions, smart meters, smart cards, smart cars, smart driving, smart roads, smart pills, smart patches, smart watches, smart skin, smart borders, smart pavements, smart streets, smart cities, smart communities, smart environments, smart growth, smart planet ... smart *everything* around us. Smart technologies and methods of operation are designed to interlock to create a global Smart Grid connecting the entirety of human society including human minds to create a centrally-dictated ‘hive’ mind. ‘Smart cities’ is code for densely-occupied megacities of total surveillance and control through AI. Ever more destructive frequency communication systems like 5G have been rolled out without any official testing for health and psychological effects (colossal). 5G/6G/7G systems are needed to run the Smart Grid and each one becomes more destructive of body and mind. Deleting independent income is crucial to forcing people into these AI-policed prisons by ending private property ownership (except for the Cult elite). The Cult’s Great Reset now openly foresees a global society in which no one will own any possessions and everything will be rented while the Cult would own literally everything under the guise of government and corporations. The aim has been to use the lockdowns to destroy sources of income on a mass scale and when the people are destitute and in unrepayable amounts of debt (problem) Cult assets come forward with the pledge to write-off debt in return for handing over all property and possessions (solution). Everything – literally everything including people – would be connected to the Internet via AI. I was warning years ago about the coming Internet of Things (IoT) in which all devices and technology from your car to your fridge would be plugged into the Internet and controlled by AI. Now we are already there with much more to come. The next stage is the Internet of Everything (IoE) which is planned to include the connection of AI to the human brain and body to replace the human mind with a centrally-controlled AI mind. Instead of perceptions

being manipulated through control of information and censorship those perceptions would come direct from the Cult through AI. What do you think? You think whatever AI decides that you think. In human terms there would be no individual 'think' any longer. Too incredible? The ravings of a lunatic? Not at all. Cult-owned crazies in Silicon Valley have been telling us the plan for years without explaining the real motivation and calculated implications. These include Google executive and 'futurist' Ray Kurzweil who highlights the year 2030 for when this would be underway. He said:

Our thinking ... will be a hybrid of biological and non-biological thinking ... humans will be able to extend their limitations and 'think in the cloud' ... We're going to put gateways to the cloud in our brains ... We're going to gradually merge and enhance ourselves ... In my view, that's the nature of being human – we transcend our limitations.

As the technology becomes vastly superior to what we are then the small proportion that is still human gets smaller and smaller and smaller until it's just utterly negligible.

The sales-pitch of Kurzweil and Cult-owned Silicon Valley is that this would make us 'super-human' when the real aim is to make us post-human and no longer 'human' in the sense that we have come to know. The entire global population would be connected to AI and become the centrally-controlled 'hive-mind' of externally-delivered perceptions. The Smart Grid being installed to impose the Cult's will on the world is being constructed to allow particular locations – even one location – to control the whole global system. From these prime control centres, which absolutely include China and Israel, anything connected to the Internet would be switched on or off and manipulated at will. Energy systems could be cut, communication via the Internet taken down, computer-controlled driverless autonomous vehicles driven off the road, medical devices switched off, the potential is limitless given how much AI and Internet connections now run human society. We have seen nothing yet if we allow this to continue. Autonomous vehicle makers are working with law enforcement to produce cars designed to automatically pull over if they detect a police or emergency vehicle flashing from up to 100 feet away. At a police stop the car would be unlocked and the

window rolled down automatically. Vehicles would only take you where the computer (the state) allowed. The end of petrol vehicles and speed limiters on all new cars in the UK and EU from 2022 are steps leading to electric computerised transport over which ultimately you have no control. The picture is far bigger even than the Cult global network or web and that will become clear when I get to the nature of the 'spider'. There is a connection between all these happenings and the instigation of DNA-manipulating 'vaccines' (which aren't 'vaccines') justified by the 'Covid' hoax. That connection is the unfolding plan to transform the human body from a biological to a synthetic biological state and this is why synthetic biology is such a fast-emerging discipline of mainstream science. 'Covid vaccines' are infusing self-replicating synthetic genetic material into the cells to cumulatively take us on the Totalitarian Tiptoe from Human 1.0 to the synthetic biological Human 2.0 which will be physically and perceptually attached to the Smart Grid to one hundred percent control every thought, perception and deed. Humanity needs to wake up and *fast*.

This is the barest explanation of where the 'outcome' is planned to go but it's enough to see the journey happening all around us. Those new to this information will already see 'Covid' in a whole new context. I will add much more detail as we go along, but for the minutiae evidence see my mega-works, *The Answer*, *The Trigger* and *Everything You Need to Know But Have Never Been Told*.

Now – how does a Renegade Mind see the 'world'?

CHAPTER TWO

Renegade Perception

It is one thing to be clever and another to be wise

George R.R. Martin

A simple definition of the difference between a programmed mind and a Renegade Mind would be that one sees only dots while the other connects them to see the picture. Reading reality with accuracy requires the observer to (a) know the planned outcome and (b) realise that everything, but *everything*, is connected.

The entirety of infinite reality is connected – that's its very nature – and with human society an expression of infinite reality the same must apply. Simple cause and effect is a connection. The effect is triggered by the cause and the effect then becomes the cause of another effect. Nothing happens in isolation because it *can't*. Life in whatever reality is simple choice and consequence. We make choices and these lead to consequences. If we don't like the consequences we can make different choices and get different consequences which lead to other choices and consequences. The choice and the consequence are not only connected they are indivisible. You can't have one without the other as an old song goes. A few cannot control the world unless those being controlled allow that to happen – cause and effect, choice and consequence. Control – who has it and who doesn't – is a two-way process, a symbiotic relationship, involving the controller and controlled. 'They took my freedom away!!' Well, yes, but you also gave it to them. Humanity is

subjected to mass control because humanity has acquiesced to that control. This is all cause and effect and literally a case of give and take. In the same way world events of every kind are connected and the Cult works incessantly to sell the illusion of the random and coincidental to maintain the essential (to them) perception of dots that hide the picture. Renegade Minds know this and constantly scan the world for patterns of connection. This is absolutely pivotal in understanding the happenings in the world and without that perspective clarity is impossible. First you know the planned outcome and then you identify the steps on the journey – the day-by-day apparently random which, when connected in relation to the outcome, no longer appear as individual events, but as the proverbial *chain* of events leading in the same direction. I'll give you some examples:

Political puppet show

We are told to believe that politics is 'adversarial' in that different parties with different beliefs engage in an endless tussle for power. There may have been some truth in that up to a point – and only a point – but today divisions between 'different' parties are rhetorical not ideological. Even the rhetorical is fusing into one-speak as the parties eject any remaining free thinkers while others succumb to the ever-gathering intimidation of anyone with the 'wrong' opinion. The Cult is not a new phenomenon and can be traced back thousands of years as my books have documented. Its intergenerational initiatives have been manipulating events with increasing effect the more that global power has been centralised. In ancient times the Cult secured control through the system of monarchy in which 'special' bloodlines (of which more later) demanded the right to rule as kings and queens simply by birthright and by vanquishing others who claimed the same birthright. There came a time, however, when people had matured enough to see the unfairness of such tyranny and demanded a say in who governed them. Note the word – *governed* them. Not served them – *governed* them, hence government defined as 'the political direction and control exercised over the

actions of the members, citizens, or inhabitants of communities, societies, and states; direction of the affairs of a state, community, etc.' Governments exercise control over rather than serve just like the monarchies before them. Bizarrely there are still countries like the United Kingdom which are ruled by a monarch *and* a government that officially answers to the monarch. The UK head of state and that of Commonwealth countries such as Canada, Australia and New Zealand is 'selected' by who in a *single family* had unprotected sex with whom and in what order. Pinch me it can't be true. Ouch! Shit, it is. The demise of monarchies in most countries offered a potential vacuum in which some form of free and fair society could arise and the Cult had that base covered. Monarchies had served its interests but they couldn't continue in the face of such widespread opposition and, anyway, replacing a 'royal' dictatorship that people could see with a dictatorship 'of the people' hiding behind the concept of 'democracy' presented far greater manipulative possibilities and ways of hiding coordinated tyranny behind the illusion of 'freedom'.

Democracy is quite wrongly defined as government selected by the population. This is not the case at all. It is government selected by *some* of the population (and then only in theory). This 'some' doesn't even have to be the majority as we have seen so often in first-past-the-post elections in which the so-called majority party wins fewer votes than the 'losing' parties combined. Democracy can give total power to a party in government from a minority of the votes cast. It's a sleight of hand to sell tyranny as freedom. Seventy-four million Trump-supporting Americans didn't vote for the 'Democratic' Party of Joe Biden in the distinctly dodgy election in 2020 and yet far from acknowledging the wishes and feelings of that great percentage of American society the Cult-owned Biden government set out from day one to destroy them and their right to a voice and opinion. Empty shell Biden and his Cult handlers said they were doing this to 'protect democracy'. Such is the level of lunacy and sickness to which politics has descended. Connect the dots and relate them to the desired outcome – a world government run by self-appointed technocrats and no longer even elected

politicians. While operating through its political agents in government the Cult is at the same time encouraging public disdain for politicians by putting idiots and incompetents in theoretical power on the road to deleting them. The idea is to instil a public reaction that says of the technocrats: 'Well, they couldn't do any worse than the pathetic politicians.' It's all about controlling perception and Renegade Minds can see through that while programmed minds cannot when they are ignorant of both the planned outcome and the manipulation techniques employed to secure that end. This knowledge can be learned, however, and fast if people choose to get informed.

Politics may at first sight appear very difficult to control from a central point. I mean look at the 'different' parties and how would you be able to oversee them all and their constituent parts? In truth, it's very straightforward because of their structure. We are back to the pyramid of imposition and acquiescence. Organisations are structured in the same way as the system as a whole. Political parties are not open forums of free expression. They are hierarchies. I was a national spokesman for the British Green Party which claimed to be a different kind of politics in which influence and power was devolved; but I can tell you from direct experience – and it's far worse now – that Green parties are run as hierarchies like all the others however much they may try to hide that fact or kid themselves that it's not true. A very few at the top of all political parties are directing policy and personnel. They decide if you are elevated in the party or serve as a government minister and to do that you have to be a yes man or woman. Look at all the maverick political thinkers who never ascended the greasy pole. If you want to progress within the party or reach 'high-office' you need to fall into line and conform. Exceptions to this are rare indeed. Should you want to run for parliament or Congress you have to persuade the local or state level of the party to select you and for that you need to play the game as dictated by the hierarchy. If you secure election and wish to progress within the greater structure you need to go on conforming to what is acceptable to those running the hierarchy

from the peak of the pyramid. Political parties are perceptual gulags and the very fact that there are party 'Whips' appointed to 'whip' politicians into voting the way the hierarchy demands exposes the ridiculous idea that politicians are elected to serve the people they are supposed to represent. Cult operatives and manipulation has long seized control of major parties that have any chance of forming a government and at least most of those that haven't. A new party forms and the Cult goes to work to infiltrate and direct. This has reached such a level today that you see video compilations of 'leaders' of all parties whether Democrats, Republicans, Conservative, Labour and Green parroting the same Cult mantra of 'Build Back Better' and the 'Great Reset' which are straight off the Cult song-sheet to describe the transformation of global society in response to the Cult-instigated hoaxes of the 'Covid pandemic' and human-caused 'climate change'. To see Caroline Lucas, the Green Party MP that I knew when I was in the party in the 1980s, speaking in support of plans proposed by Cult operative Klaus Schwab representing the billionaire global elite is a real head-shaker.

Many parties – one master

The party system is another mind-trick and was instigated to change the nature of the dictatorship by swapping 'royalty' for dark suits that people believed – though now ever less so – represented their interests. Understanding this trick is to realise that a single force (the Cult) controls all parties either directly in terms of the major ones or through manipulation of perception and ideology with others. You don't need to manipulate Green parties to demand your transformation of society in the name of 'climate change' when they are obsessed with the lie that this is essential to 'save the planet'. You just give them a platform and away they go serving your interests while believing they are being environmentally virtuous. America's political structure is a perfect blueprint for how the two or multi-party system is really a one-party state. The Republican Party is controlled from one step back in the shadows by a group made up of billionaires and their gofers known as neoconservatives or Neocons.

I have exposed them in fine detail in my books and they were the driving force behind the policies of the imbecilic presidency of Boy George Bush which included 9/11 (see *The Trigger* for a comprehensive demolition of the official story), the subsequent 'war on terror' (war of terror) and the invasions of Afghanistan and Iraq. The latter was a No-Problem-Reaction-Solution based on claims by Cult operatives, including Bush and British Prime Minister Tony Blair, about Saddam Hussein's 'weapons of mass destruction' which did not exist as war criminals Bush and Blair well knew.



Figure 6: Different front people, different parties – same control system.

The Democratic Party has its own 'Neocon' group controlling from the background which I call the 'Democons' and here's the penny-drop – the Neocons and Democons answer to the same masters one step further back into the shadows (Fig 6). At that level of the Cult the Republican and Democrat parties are controlled by the same people and no matter which is in power the Cult is in power. This is how it works in almost every country and certainly in Britain with Conservative, Labour, Liberal Democrat and Green parties now all on the same page whatever the rhetoric may be in their feeble attempts to appear different. Neocons operated at the time of Bush through a think tank called The Project for the New American Century which in September, 2000, published a document entitled *Rebuilding America's Defenses: Strategies, Forces, and Resources*

For a New Century demanding that America fight ‘multiple, simultaneous major theatre wars’ as a ‘core mission’ to force regime-change in countries including Iraq, Libya and Syria. Neocons arranged for Bush (‘Republican’) and Blair (‘Labour Party’) to front-up the invasion of Iraq and when they departed the Democons orchestrated the targeting of Libya and Syria through Barack Obama (‘Democrat’) and British Prime Minister David Cameron (‘Conservative Party’). We have ‘different’ parties and ‘different’ people, but the same unfolding script. The more the Cult has seized the reigns of parties and personnel the more their policies have transparently pursued the same agenda to the point where the fascist ‘Covid’ impositions of the Conservative junta of Jackboot Johnson in Britain were opposed by the Labour Party because they were not fascist enough. The Labour Party is likened to the US Democrats while the Conservative Party is akin to a British version of the Republicans and on both sides of the Atlantic they all speak the same language and support the direction demanded by the Cult although some more enthusiastically than others. It’s a similar story in country after country because it’s all centrally controlled. Oh, but what about Trump? I’ll come to him shortly. Political ‘choice’ in the ‘party’ system goes like this: You vote for Party A and they get into government. You don’t like what they do so next time you vote for Party B and they get into government. You don’t like what they do when it’s pretty much the same as Party A and why wouldn’t that be with both controlled by the same force? Given that only two, sometimes three, parties have any chance of forming a government to get rid of Party B that you don’t like you have to vote again for Party A which ... you don’t like. This, ladies and gentlemen, is what they call ‘democracy’ which we are told – wrongly – is a term interchangeable with ‘freedom’.

The cult of cults

At this point I need to introduce a major expression of the Global Cult known as Sabbatian-Frankism. Sabbatian is also spelt as Sabbatean. I will summarise here. I have published major exposés

and detailed background in other works. Sabbatian-Frankism combines the names of two frauds posing as 'Jewish' men, Sabbatai Zevi (1626-1676), a rabbi, black magician and occultist who proclaimed he was the Jewish messiah; and Jacob Frank (1726-1791), the Polish 'Jew', black magician and occultist who said he was the reincarnation of 'messiah' Zevi and biblical patriarch Jacob. They worked across two centuries to establish the Sabbatian-Frankist cult that plays a major, indeed central, role in the manipulation of human society by the Global Cult which has its origins much further back in history than Sabbatai Zevi. I should emphasise two points here in response to the shrill voices that will scream 'anti-Semitism': (1) Sabbatian-Frankists are NOT Jewish and only pose as such to hide their cult behind a Jewish façade; and (2) my information about this cult has come from Jewish sources who have long realised that their society and community has been infiltrated and taken over by interloper Sabbatian-Frankists. Infiltration has been the foundation technique of Sabbatian-Frankism from its official origin in the 17th century. Zevi's Sabbatian sect attracted a massive following described as the biggest messianic movement in Jewish history, spreading as far as Africa and Asia, and he promised a return for the Jews to the 'Promised Land' of Israel. Sabbatianism was not Judaism but an inversion of everything that mainstream Judaism stood for. So much so that this sinister cult would have a feast day when Judaism had a fast day and whatever was forbidden in Judaism the Sabbatians were encouraged and even commanded to do. This included incest and what would be today called Satanism. Members were forbidden to marry outside the sect and there was a system of keeping their children ignorant of what they were part of until they were old enough to be trusted not to unknowingly reveal anything to outsiders. The same system is employed to this day by the Global Cult in general which Sabbatian-Frankism has enormously influenced and now largely controls.

Zevi and his Sabbatians suffered a setback with the intervention by the Sultan of the Islamic Ottoman Empire in the Middle East and what is now the Republic of Turkey where Zevi was located. The

Sultan gave him the choice of proving his 'divinity', converting to Islam or facing torture and death. Funnily enough Zevi chose to convert or at least appear to. Some of his supporters were disillusioned and drifted away, but many did not with 300 families also converting – only in theory – to Islam. They continued behind this Islamic smokescreen to follow the goals, rules and rituals of Sabbatianism and became known as 'crypto-Jews' or the 'Dönme' which means 'to turn'. This is rather ironic because they didn't 'turn' and instead hid behind a fake Islamic persona. The process of appearing to be one thing while being very much another would become the calling card of Sabbatianism especially after Zevi's death and the arrival of the Satanist Jacob Frank in the 18th century when the cult became Sabbatian-Frankism and plumbed still new depths of depravity and infiltration which included – still includes – human sacrifice and sex with children. Wherever Sabbatians go paedophilia and Satanism follow and is it really a surprise that Hollywood is so infested with child abuse and Satanism when it was established by Sabbatian-Frankists and is still controlled by them? Hollywood has been one of the prime vehicles for global perceptual programming and manipulation. How many believe the version of 'history' portrayed in movies when it is a travesty and inversion (again) of the truth? Rabbi Marvin Antelman describes Frankism in his book, *To Eliminate the Opiate*, as 'a movement of complete evil' while Jewish professor Gershom Scholem said of Frank in *The Messianic Idea in Judaism*: 'In all his actions [he was] a truly corrupt and degenerate individual ... one of the most frightening phenomena in the whole of Jewish history.' Frank was excommunicated by traditional rabbis, as was Zevi, but Frank was undeterred and enjoyed vital support from the House of Rothschild, the infamous banking dynasty whose inner-core are Sabbatian-Frankists and not Jews. Infiltration of the Roman Church and Vatican was instigated by Frank with many Dönme 'turning' again to convert to Roman Catholicism with a view to hijacking the reins of power. This was the ever-repeating modus operandi and continues to be so. Pose as an advocate of the religion, culture or country that you want to control and then

manipulate your people into the positions of authority and influence largely as advisers, administrators and Svengalis for those that appear to be in power. They did this with Judaism, Christianity (Christian Zionism is part of this), Islam and other religions and nations until Sabbatian-Frankism spanned the world as it does today.

Sabbatian Saudis and the terror network

One expression of the Sabbatian-Frankist Dönme within Islam is the ruling family of Saudi Arabia, the House of Saud, through which came the vile distortion of Islam known as Wahhabism. This is the violent creed followed by terrorist groups like Al-Qaeda and ISIS or Islamic State. Wahhabism is the hand-chopping, head-chopping 'religion' of Saudi Arabia which is used to keep the people in a constant state of fear so the interloper House of Saud can continue to rule. Al-Qaeda and Islamic State were lavishly funded by the House of Saud while being created and directed by the Sabbatian-Frankist network in the United States that operates through the Pentagon, CIA and the government in general of whichever 'party'. The front man for the establishment of Wahhabism in the middle of the 18th century was a Sabbatian-Frankist 'crypto-Jew' posing as Islamic called Muhammad ibn Abd al-Wahhab. His daughter would marry the son of Muhammad bin Saud who established the first Saudi state before his death in 1765 with support from the British Empire. Bin Saud's successors would establish modern Saudi Arabia in league with the British and Americans in 1932 which allowed them to seize control of Islam's major shrines in Mecca and Medina. They have dictated the direction of Sunni Islam ever since while Iran is the major centre of the Shiite version and here we have the source of at least the public conflict between them. The Sabbatian network has used its Wahhabi extremists to carry out Problem-Reaction-Solution terrorist attacks in the name of 'Al-Qaeda' and 'Islamic State' to justify a devastating 'war on terror', ever-increasing surveillance of the population and to terrify people into compliance. Another insight of the Renegade Mind is the streetwise understanding that

just because a country, location or people are attacked doesn't mean that those apparently representing that country, location or people are not behind the attackers. Often they are *orchestrating* the attacks because of the societal changes that can be then justified in the name of 'saving the population from terrorists'.

I show in great detail in *The Trigger* how Sabbatian-Frankists were the real perpetrators of 9/11 and not '19 Arab hijackers' who were blamed for what happened. Observe what was justified in the name of 9/11 alone in terms of Middle East invasions, mass surveillance and control that fulfilled the demands of the Project for the New American Century document published by the Sabbatian Neocons. What appear to be enemies are on the deep inside players on the same Sabbatian team. Israel and Arab 'royal' dictatorships are all ruled by Sabbatians and the recent peace agreements between Israel and Saudi Arabia, the United Arab Emirates (UAE) and others are only making formal what has always been the case behind the scenes. Palestinians who have been subjected to grotesque tyranny since Israel was bombed and terrorised into existence in 1948 have never stood a chance. Sabbatian-Frankists have controlled Israel (so the constant theme of violence and war which Sabbatians love) and they have controlled the Arab countries that Palestinians have looked to for real support that never comes. 'Royal families' of the Arab world in Saudi Arabia, Bahrain, UAE, etc., are all Sabbatians with allegiance to the aims of the cult and not what is best for their Arabic populations. They have stolen the oil and financial resources from their people by false claims to be 'royal dynasties' with a genetic right to rule and by employing vicious militaries to impose their will.

Satanic 'illumination'

The Satanist Jacob Frank formed an alliance in 1773 with two other Sabbatians, Mayer Amschel Rothschild (1744-1812), founder of the Rothschild banking dynasty, and Jesuit-educated fraudulent Jew, Adam Weishaupt, and this led to the formation of the Bavarian Illuminati, firstly under another name, in 1776. The Illuminati would

be the manipulating force behind the French Revolution (1789-1799) and was also involved in the American Revolution (1775-1783) before and after the Illuminati's official creation. Weishaupt would later become (in public) a Protestant Christian in archetypal Sabbatian style. I read that his name can be decoded as Adam-Weishaupt or 'the first man to lead those who know'. He wasn't a leader in the sense that he was a subordinate, but he did lead those below him in a crusade of transforming human society that still continues today. The theme was confirmed as early as 1785 when a horseman courier called Lanz was reported to be struck by lightning and extensive Illuminati documents were found in his saddlebags. They made the link to Weishaupt and detailed the plan for world takeover. Current events with 'Covid' fascism have been in the making for a very long time. Jacob Frank was jailed for 13 years by the Catholic Inquisition after his arrest in 1760 and on his release he headed for Frankfurt, Germany, home city and headquarters of the House of Rothschild where the alliance was struck with Mayer Amschel Rothschild and Weishaupt. Rothschild arranged for Frank to be given the title of Baron and he became a wealthy nobleman with a big following of Jews in Germany, the Austro-Hungarian Empire and other European countries. Most of them would have believed he was on their side.

The name 'Illuminati' came from the Zohar which is a body of works in the Jewish mystical 'bible' called the Kabbalah. 'Zohar' is the foundation of Sabbatian-Frankist belief and in Hebrew 'Zohar' means 'splendour', 'radiance', 'illuminated', and so we have 'Illuminati'. They claim to be the 'Illuminated Ones' from their knowledge systematically hidden from the human population and passed on through generations of carefully-chosen initiates in the global secret society network or Cult. Hidden knowledge includes an awareness of the Cult agenda for the world and the nature of our collective reality that I will explore later. Cult 'illumination' is symbolised by the torch held by the Statue of Liberty which was gifted to New York by French Freemasons in Paris who knew exactly what it represents. 'Liberty' symbolises the goddess worshipped in

Babylon as Queen Semiramis or Ishtar. The significance of this will become clear. Notice again the ubiquitous theme of inversion with the Statue of 'Liberty' really symbolising mass control (Fig 7). A mirror-image statute stands on an island in the River Seine in Paris from where New York Liberty originated (Fig 8). A large replica of the Liberty flame stands on top of the Pont de l'Alma tunnel in Paris where Princess Diana died in a Cult ritual described in *The Biggest Secret*. Lucifer 'the light bringer' is related to all this (and much more as we'll see) and 'Lucifer' is a central figure in Sabbatian-Frankism and its associated Satanism. Sabbatians reject the Jewish Torah, or Pentateuch, the 'five books of Moses' in the Old Testament known as Genesis, Exodus, Leviticus, Numbers, and Deuteronomy which are claimed by Judaism and Christianity to have been dictated by 'God' to Moses on Mount Sinai. Sabbatians say these do not apply to them and they seek to replace them with the Zohar to absorb Judaism and its followers into their inversion which is an expression of a much greater global inversion. They want to delete all religions and force humanity to worship a one-world religion – Sabbatian Satanism that also includes worship of the Earth goddess. Satanic themes are being more and more introduced into mainstream society and while Christianity is currently the foremost target for destruction the others are planned to follow.



Figure 7: The Cult goddess of Babylon disguised as the Statue of Liberty holding the flame of Lucifer the 'light bringer'.



Figure 8: Liberty's mirror image in Paris where the New York version originated.

Marx brothers

Rabbi Marvin Antelman connects the Illuminati to the Jacobins in *To Eliminate the Opiate* and Jacobins were the force behind the French Revolution. He links both to the Bund der Gerechten, or League of the Just, which was the network that inflicted communism/Marxism on the world. Antelman wrote:

The original inner circle of the Bund der Gerechten consisted of born Catholics, Protestants and Jews [Sabbatian-Frankist infiltrators], and those representatives of respective subdivisions formulated schemes for the ultimate destruction of their faiths. The heretical Catholics laid plans which they felt would take a century or more for the ultimate destruction of the church; the apostate Jews for the ultimate destruction of the Jewish religion.

Sabbatian-created communism connects into this anti-religion agenda in that communism does not allow for the free practice of religion. The Sabbatian 'Bund' became the International Communist Party and Communist League and in 1848 'Marxism' was born with the Communist Manifesto of Sabbatian assets Karl Marx and Friedrich Engels. It is absolutely no coincidence that Marxism, just a different name for fascist and other centrally-controlled tyrannies, is being imposed worldwide as a result of the 'Covid' hoax and nor that Marxist/fascist China was the place where the hoax originated. The reason for this will become very clear in the chapter 'Covid: The calculated catastrophe'. The so-called 'Woke' mentality has hijacked

traditional beliefs of the political left and replaced them with far-right make-believe 'social justice' better known as Marxism. Woke will, however, be swallowed by its own perceived 'revolution' which is really the work of billionaires and billionaire corporations feigning being 'Woke'. Marxism is being touted by Wokers as a replacement for 'capitalism' when we don't have 'capitalism'. We have cartelism in which the market is stitched up by the very Cult billionaires and corporations bankrolling Woke. Billionaires love Marxism which keeps the people in servitude while they control from the top. Terminally naïve Wokers think they are 'changing the world' when it's the Cult that is doing the changing and when they have played their vital part and become surplus to requirements they, too, will be targeted. The Illuminati-Jacobins were behind the period known as 'The Terror' in the French Revolution in 1793 and 1794 when Jacobin Maximillian de Robespierre and his Orwellian 'Committee of Public Safety' killed 17,000 'enemies of the Revolution' who had once been 'friends of the Revolution'. Karl Marx (1818-1883), whose Sabbatian creed of Marxism has cost the lives of at least 100 million people, is a hero once again to Wokers who have been systematically kept ignorant of real history by their 'education' programming. As a result they now promote a Sabbatian 'Marxist' abomination destined at some point to consume them. Rabbi Antelman, who spent decades researching the Sabbatian plot, said of the League of the Just and Karl Marx:

Contrary to popular opinion Karl Marx did not originate the Communist Manifesto. He was paid for his services by the League of the Just, which was known in its country of origin, Germany, as the Bund der Geächteten.

Antelman said the text attributed to Marx was the work of other people and Marx 'was only repeating what others already said'. Marx was 'a hired hack – lackey of the wealthy Illuminists'. Marx famously said that religion was the 'opium of the people' (part of the Sabbatian plan to demonise religion) and Antelman called his books, *To Eliminate the Opiate*. Marx was born Jewish, but his family converted to Christianity (Sabbatian modus operandi) and he

attacked Jews, not least in his book, *A World Without Jews*. In doing so he supported the Sabbatian plan to destroy traditional Jewishness and Judaism which we are clearly seeing today with the vindictive targeting of orthodox Jews by the Sabbatian government of Israel over 'Covid' laws. I don't follow any religion and it has done much damage to the world over centuries and acted as a perceptual straightjacket. Renegade Minds, however, are always asking *why* something is being done. It doesn't matter if they agree or disagree with what is happening – *why* is it happening is the question. The 'why?' can be answered with regard to religion in that religions create interacting communities of believers when the Cult wants to dismantle all discourse, unity and interaction (see 'Covid' lockdowns) and the ultimate goal is to delete all religions for a one-world religion of Cult Satanism worshipping their 'god' of which more later. We see the same 'why?' with gun control in America. I don't have guns and don't want them, but why is the Cult seeking to disarm the population at the same time that law enforcement agencies are armed to their molars and why has every tyrant in history sought to disarm people before launching the final takeover? They include Hitler, Stalin, Pol Pot and Mao who followed confiscation with violent seizing of power. You know it's a Cult agenda by the people who immediately race to the microphones to exploit dead people in multiple shootings. Ultra-Zionist Cult lackey Senator Chuck Schumer was straight on the case after ten people were killed in Boulder, Colorado in March, 2121. Simple rule ... if Schumer wants it the Cult wants it and the same with his ultra-Zionist mate the wild-eyed Senator Adam Schiff. At the same time they were calling for the disarmament of Americans, many of whom live a long way from a police response, Schumer, Schiff and the rest of these pampered clowns were sitting on Capitol Hill behind a razor-wired security fence protected by thousands of armed troops in addition to their own armed bodyguards. Mom and pop in an isolated home? They're just potential mass shooters.

Zion Mainframe

Sabbatian-Frankists and most importantly the Rothschilds were behind the creation of 'Zionism', a political movement that demanded a Jewish homeland in Israel as promised by Sabbatai Zevi. The very symbol of Israel comes from the German meaning of the name Rothschild. Dynasty founder Mayer Amschel Rothschild changed the family name from Bauer to Rothschild, or 'Red-Shield' in German, in deference to the six-pointed 'Star of David' hexagram displayed on the family's home in Frankfurt. The symbol later appeared on the flag of Israel after the Rothschilds were centrally involved in its creation. Hexagrams are not a uniquely Jewish symbol and are widely used in occult ('hidden') networks often as a symbol for Saturn (see my other books for why). Neither are Zionism and Jewishness interchangeable. Zionism is a political movement and philosophy and not a 'race' or a people. Many Jews oppose Zionism and many non-Jews, including US President Joe Biden, call themselves Zionists as does Israel-centric Donald Trump. America's support for the Israel government is pretty much a gimme with ultra-Zionist billionaires and corporations providing fantastic and dominant funding for both political parties. Former Congresswoman Cynthia McKinney has told how she was approached immediately she ran for office to 'sign the pledge' to Israel and confirm that she would always vote in that country's best interests. All American politicians are approached in this way. Anyone who refuses will get no support or funding from the enormous and all-powerful Zionist lobby that includes organisations like mega-lobby group AIPAC, the American Israel Public Affairs Committee. Trump's biggest funder was ultra-Zionist casino and media billionaire Sheldon Adelson while major funders of the Democratic Party include ultra-Zionist George Soros and ultra-Zionist financial and media mogul, Haim Saban. Some may reel back at the suggestion that Soros is an Israel-firster (Sabbatian-controlled Israel-firster), but Renegade Minds watch the actions not the words and everywhere Soros donates his billions the Sabbatian agenda benefits. In the spirit of Sabbatian inversion Soros pledged \$1 billion for a new university network to promote 'liberal values and tackle intolerance'. He made the announcement during his annual speech

at the Cult-owned World Economic Forum in Davos, Switzerland, in January, 2020, after his 'harsh criticism' of 'authoritarian rulers' around the world. You can only laugh at such brazen mendacity. How *he* doesn't laugh is the mystery. Translated from the Orwellian 'liberal values and tackle intolerance' means teaching non-white people to hate white people and for white people to loathe themselves for being born white. The reason for that will become clear.

The 'Anti-Semitism' fraud

Zionists support the Jewish homeland in the land of Palestine which has been the Sabbatian-Rothschild goal for so long, but not for the benefit of Jews. Sabbatians and their global Anti-Semitism Industry have skewed public and political opinion to equate opposing the violent extremes of Zionism to be a blanket attack and condemnation of all Jewish people. Sabbatians and their global Anti-Semitism Industry have skewed public and political opinion to equate opposing the violent extremes of Zionism to be a blanket attack and condemnation of all Jewish people. This is nothing more than a Sabbatian protection racket to stop legitimate investigation and exposure of their agendas and activities. The official definition of 'anti-Semitism' has more recently been expanded to include criticism of Zionism – a *political movement* – and this was done to further stop exposure of Sabbatian infiltrators who created Zionism as we know it today in the 19th century. Renegade Minds will talk about these subjects when they know the shit that will come their way. People must decide if they want to know the truth or just cower in the corner in fear of what others will say. Sabbatians have been trying to label me as 'anti-Semitic' since the 1990s as I have uncovered more and more about their background and agendas. Useless, gutless, fraudulent 'journalists' then just repeat the smears without question and on the day I was writing this section a pair of unquestioning repeaters called Ben Quinn and Archie Bland (how appropriate) outright called me an 'anti-Semite' in the establishment propaganda sheet, the London *Guardian*, with no supporting evidence. The

Sabbatian Anti-Semitism Industry said so and who are they to question that? They wouldn't dare. Ironically 'Semitic' refers to a group of languages in the Middle East that are almost entirely Arabic. 'Anti-Semitism' becomes 'anti-Arab' which if the consequences of this misunderstanding were not so grave would be hilarious. Don't bother telling Quinn and Bland. I don't want to confuse them, bless 'em. One reason I am dubbed 'anti-Semitic' is that I wrote in the 1990s that Jewish operatives (Sabbatians) were heavily involved in the Russian Revolution when Sabbatians overthrew the Romanov dynasty. This apparently made me 'anti-Semitic'. Oh, really? Here is a section from *The Trigger*:

British journalist Robert Wilton confirmed these themes in his 1920 book *The Last Days of the Romanovs* when he studied official documents from the Russian government to identify the members of the Bolshevik ruling elite between 1917 and 1919. The Central Committee included 41 Jews among 62 members; the Council of the People's Commissars had 17 Jews out of 22 members; and 458 of the 556 most important Bolshevik positions between 1918 and 1919 were occupied by Jewish people. Only 17 were Russian. Then there were the 23 Jews among the 36 members of the vicious Cheka Soviet secret police established in 1917 who would soon appear all across the country.

Professor Robert Service of Oxford University, an expert on 20th century Russian history, found evidence that ['Jewish'] Leon Trotsky had sought to make sure that Jews were enrolled in the Red Army and were disproportionately represented in the Soviet civil bureaucracy that included the Cheka which performed mass arrests, imprisonment and executions of 'enemies of the people'. A US State Department Decimal File (861.00/5339) dated November 13th, 1918, names [Rothschild banking agent in America] Jacob Schiff and a list of ultra-Zionists as funders of the Russian Revolution leading to claims of a 'Jewish plot', but the key point missed by all is they were not 'Jews' – they were Sabbatian-Frankists.

Britain's Winston Churchill made the same error by mistake or otherwise. He wrote in a 1920 edition of the *Illustrated Sunday Herald* that those behind the Russian revolution were part of a 'worldwide conspiracy for the overthrow of civilisation and for the reconstitution of society on the basis of arrested development, of envious malevolence, and impossible equality' (see 'Woke' today because that has been created by the same network). Churchill said there was no need to exaggerate the part played in the creation of Bolshevism and in the actual bringing about of the Russian

Revolution 'by these international and for the most part atheistical Jews' ['atheistical Jews' = Sabbatians]. Churchill said it is certainly a very great one and probably outweighs all others: 'With the notable exception of Lenin, the majority of the leading figures are Jews.' He went on to describe, knowingly or not, the Sabbatian modus operandi of placing puppet leaders nominally in power while they control from the background:

Moreover, the principal inspiration and driving power comes from the Jewish leaders. Thus Tchitcherin, a pure Russian, is eclipsed by his nominal subordinate, Litvinoff, and the influence of Russians like Bukharin or Lunacharski cannot be compared with the power of Trotsky, or of Zinovieff, the Dictator of the Red Citadel (Petrograd), or of Krassin or Radek – all Jews. In the Soviet institutions the predominance of Jews is even more astonishing. And the prominent, if not indeed the principal, part in the system of terrorism applied by the Extraordinary Commissions for Combatting Counter-Revolution has been taken by Jews, and in some notable cases by Jewesses.

What I said about seriously disproportionate involvement in the Russian Revolution by Jewish 'revolutionaries' (Sabbatians) is provable fact, but truth is no defence against the Sabbatian Anti-Semitism Industry, its repeater parrots like Quinn and Bland, and the now breathtaking network of so-called 'Woke' 'anti-hate' groups with interlocking leaderships and funding which have the role of discrediting and silencing anyone who gets too close to exposing the Sabbatians. We have seen 'truth is no defence' confirmed in legal judgements with the Saskatchewan Human Rights Commission in Canada decreeing this: 'Truthful statements can be presented in a manner that would meet the definition of hate speech, and not all truthful statements must be free from restriction.' Most 'anti-hate' activists, who are themselves consumed by hatred, are too stupid and ignorant of the world to know how they are being used. They are far too far up their own virtue-signalling arses and it's far too dark for them to see anything.

The 'revolution' game

The background and methods of the 'Russian' Revolution are straight from the Sabbatian playbook seen in the French Revolution

and endless others around the world that appear to start as a revolution of the people against tyrannical rule and end up with a regime change to more tyrannical rule overtly or covertly. Wars, terror attacks and regime overthrows follow the Sabbatian cult through history with its agents creating them as Problem-Reaction-Solutions to remove opposition on the road to world domination. Sabbatian dots connect the Rothschilds with the Illuminati, Jacobins of the French Revolution, the 'Bund' or League of the Just, the International Communist Party, Communist League and the Communist Manifesto of Karl Marx and Friedrich Engels that would lead to the Rothschild-funded Russian Revolution. The sequence comes under the heading of 'creative destruction' when you advance to your global goal by continually destroying the status quo to install a new status quo which you then also destroy. The two world wars come to mind. With each new status quo you move closer to your planned outcome. Wars and mass murder are to Sabbatians a collective blood sacrifice ritual. They are obsessed with death for many reasons and one is that death is an inversion of life. Satanists and Sabbatians are obsessed with death and often target churches and churchyards for their rituals. Inversion-obsessed Sabbatians explain the use of inverted symbolism including the *inverted* pentagram and *inverted* cross. The inversion of the cross has been related to targeting Christianity, but the cross was a religious symbol long before Christianity and its inversion is a statement about the Sabbatian mentality and goals more than any single religion.

Sabbatians operating in Germany were behind the rise of the occult-obsessed Nazis and the subsequent Jewish exodus from Germany and Europe to Palestine and the United States after World War Two. The Rothschild dynasty was at the forefront of this both as political manipulators and by funding the operation. Why would Sabbatians help to orchestrate the horrors inflicted on Jews by the Nazis and by Stalin after they organised the Russian Revolution? Sabbatians hate Jews and their religion, that's why. They pose as Jews and secure positions of control within Jewish society and play the 'anti-Semitism' card to protect themselves from exposure

through a global network of organisations answering to the Sabbatian-created-and-controlled globe-spanning intelligence network that involves a stunning web of military-intelligence operatives and operations for a tiny country of just nine million. Among them are Jewish assets who are not Sabbatians but have been convinced by them that what they are doing is for the good of Israel and the Jewish community to protect them from what they have been programmed since childhood to believe is a Jew-hating hostile world. The Jewish community is just a highly convenient cover to hide the true nature of Sabbatians. Anyone getting close to exposing their game is accused by Sabbatian place-people and gofers of 'anti-Semitism' and claiming that all Jews are part of a plot to take over the world. I am not saying that. I am saying that Sabbatians – the *real* Jew-haters – have infiltrated the Jewish community to use them both as a cover and an 'anti-Semitic' defence against exposure. Thus we have the Anti-Semitism Industry targeted researchers in this way and most Jewish people think this is justified and genuine. They don't know that their 'Jewish' leaders and institutions of state, intelligence and military are not controlled by Jews at all, but cultists and stooges of Sabbatian-Frankism. I once added my name to a pro-Jewish freedom petition online and the next time I looked my name was gone and text had been added to the petition blurb to attack me as an 'anti-Semite' such is the scale of perceptual programming.

Moving on America

I tell the story in *The Trigger* and a chapter called 'Atlantic Crossing' how particularly after Israel was established the Sabbatians moved in on the United States and eventually grasped control of government administration, the political system via both Democrats and Republicans, the intelligence community like the CIA and National Security Agency (NSA), the Pentagon and mass media. Through this seriously compartmentalised network Sabbatians and their operatives in Mossad, Israeli Defense Forces (IDF) and US agencies pulled off 9/11 and blamed it on 19 'Al-Qaeda hijackers' dominated by men from, or connected to, Sabbatian-ruled Saudi

Arabia. The '19' were not even on the planes let alone flew those big passenger jets into buildings while being largely incompetent at piloting one-engine light aircraft. 'Hijacker' Hani Hanjour who is said to have flown American Airlines Flight 77 into the Pentagon with a turn and manoeuvre most professional pilots said they would have struggled to do was banned from renting a small plane by instructors at the Freeway Airport in Bowie, Maryland, just *six weeks* earlier on the grounds that he was an incompetent pilot. The Jewish population of the world is just 0.2 percent with even that almost entirely concentrated in Israel (75 percent Jewish) and the United States (around two percent). This two percent and globally 0.2 percent refers to *Jewish* people and not Sabbatian interlopers who are a fraction of that fraction. What a sobering thought when you think of the fantastic influence on world affairs of tiny Israel and that the Project for the New America Century (PNAC) which laid out the blueprint in September, 2000, for America's war on terror and regime change wars in Iraq, Libya and Syria was founded and dominated by Sabbatians known as 'Neocons'. The document conceded that this plan would not be supported politically or publicly without a major attack on American soil and a Problem-Reaction-Solution excuse to send troops to war across the Middle East. Sabbatian Neocons said:

... [The] process of transformation ... [war and regime change] ... is likely to be a long one, absent some catastrophic and catalysing event – like a new Pearl Harbor.

Four months later many of those who produced that document came to power with their inane puppet George Bush from the long-time Sabbatian Bush family. They included Sabbatian Dick Cheney who was officially vice-president, but really de-facto president for the entirety of the 'Bush' government. Nine months after the 'Bush' inauguration came what Bush called at the time 'the Pearl Harbor of the 21st century' and with typical Sabbatian timing and symbolism 2001 was the 60th anniversary of the attack in 1941 by the Japanese Air Force on Pearl Harbor, Hawaii, which allowed President Franklin Delano Roosevelt to take the United States into a Sabbatian-

instigated Second World War that he said in his election campaign that he never would. The evidence is overwhelming that Roosevelt and his military and intelligence networks knew the attack was coming and did nothing to stop it, but they did make sure that America's most essential naval ships were not in Hawaii at the time. Three thousand Americans died in the Pearl Harbor attacks as they did on September 11th. By the 9/11 year of 2001 Sabbatians had widely infiltrated the US government, military and intelligence operations and used their compartmentalised assets to pull off the 'Al-Qaeda' attacks. If you read *The Trigger* it will blow your mind to see the utterly staggering concentration of 'Jewish' operatives (Sabbatian infiltrators) in essential positions of political, security, legal, law enforcement, financial and business power before, during, and after the attacks to make them happen, carry them out, and then cover their tracks – and I do mean *staggering* when you think of that 0.2 percent of the world population and two percent of Americans which are Jewish while Sabbatian infiltrators are a fraction of that. A central foundation of the 9/11 conspiracy was the hijacking of government, military, Air Force and intelligence computer systems in real time through 'back-door' access made possible by Israeli (Sabbatian) 'cyber security' software. Sabbatian-controlled Israel is on the way to rivalling Silicon Valley for domination of cyberspace and is becoming the dominant force in cyber-security which gives them access to entire computer systems and their passcodes across the world. Then add to this that Zionists head (officially) Silicon Valley giants like Google (Larry Page and Sergey Brin), Google-owned YouTube (Susan Wojcicki), Facebook (Mark Zuckerberg and Sheryl Sandberg), and Apple (Chairman Arthur D. Levinson), and that ultra-Zionist hedge fund billionaire Paul Singer has a \$1 billion stake in Twitter which is only nominally headed by 'CEO' pothead Jack Dorsey. As cable news host Tucker Carlson said of Dorsey: 'There used to be debate in the medical community whether dropping a ton of acid had permanent effects and I think that debate has now ended.' Carlson made the comment after Dorsey told a hearing on Capitol Hill (if you cut through his bullshit) that he

believed in free speech so long as he got to decide what you can hear and see. These 'big names' of Silicon Valley are only front men and women for the Global Cult, not least the Sabbatians, who are the true controllers of these corporations. Does anyone still wonder why these same people and companies have been ferociously censoring and banning people (like me) for exposing any aspect of the Cult agenda and especially the truth about the 'Covid' hoax which Sabbatians have orchestrated?

The Jeffrey Epstein paedophile ring was a Sabbatian operation. He was officially 'Jewish' but he was a Sabbatian and women abused by the ring have told me about the high number of 'Jewish' people involved. The Epstein horror has Sabbatian written all over it and matches perfectly their modus operandi and obsession with sex and ritual. Epstein was running a Sabbatian blackmail ring in which famous people with political and other influence were provided with young girls for sex while everything was being filmed and recorded on hidden cameras and microphones at his New York house, Caribbean island and other properties. Epstein survivors have described this surveillance system to me and some have gone public. Once the famous politician or other figure knew he or she was on video they tended to do whatever they were told. Here we go again ...when you've got them by the balls their hearts and minds will follow. Sabbatians use this blackmail technique on a wide scale across the world to entrap politicians and others they need to act as demanded. Epstein's private plane, the infamous 'Lolita Express', had many well-known passengers including Bill Clinton while Bill Gates has flown on an Epstein plane and met with him four years after Epstein had been jailed for paedophilia. They subsequently met many times at Epstein's home in New York according to a witness who was there. Epstein's infamous side-kick was Ghislaine Maxwell, daughter of Mossad agent and ultra-Zionist mega-crooked British businessman, Bob Maxwell, who at one time owned the *Daily Mirror* newspaper. Maxwell was murdered at sea on his boat in 1991 by Sabbatian-controlled Mossad when he became a liability with his

business empire collapsing as a former Mossad operative has confirmed (see *The Trigger*).

Money, money, money, funny money ...

Before I come to the Sabbatian connection with the last three US presidents I will lay out the crucial importance to Sabbatians of controlling banking and finance. Sabbatian Mayer Amschel Rothschild set out to dominate this arena in his family's quest for total global control. What is freedom? It is, in effect, choice. The more choices you have the freer you are and the fewer your choices the more you are enslaved. In the global structure created over centuries by Sabbatians the biggest decider and restrictor of choice is ... money. Across the world if you ask people what they would like to do with their lives and why they are not doing that they will reply 'I don't have the money'. This is the idea. A global elite of multi-billionaires are described as 'greedy' and that is true on one level; but control of money – who has it and who doesn't – is not primarily about greed. It's about control. Sabbatians have seized ever more control of finance and sucked the wealth of the world out of the hands of the population. We talk now, after all, about the 'One-percent' and even then the wealthiest are a lot fewer even than that. This has been made possible by a money scam so outrageous and so vast it could rightly be called the scam of scams founded on creating 'money' out of nothing and 'loaning' that with interest to the population. Money out of nothing is called 'credit'. Sabbatians have asserted control over governments and banking ever more completely through the centuries and secured financial laws that allow banks to lend hugely more than they have on deposit in a confidence trick known as fractional reserve lending. Imagine if you could lend money that doesn't exist and charge the recipient interest for doing so. You would end up in jail. Bankers by contrast end up in mansions, private jets, Malibu and Monaco.

Banks are only required to keep a fraction of their deposits and wealth in their vaults and they are allowed to lend 'money' they don't have called 'credit'. Go into a bank for a loan and if you succeed

the banker will not move any real wealth into your account. They will type into your account the amount of the agreed 'loan' – say £100,000. This is not wealth that really exists; it is non-existent, fresh-air, created-out-of-nothing 'credit' which has never, does not, and will never exist except in theory. Credit is backed by nothing except wind and only has buying power because people think that it has buying power and accept it in return for property, goods and services. I have described this situation as like those cartoon characters you see chasing each other and when they run over the edge of a cliff they keep running forward on fresh air until one of them looks down, realises what's happened, and they all crash into the ravine. The whole foundation of the Sabbatian financial system is to stop people looking down except for periodic moments when they want to crash the system (as in 2008 and 2020 ongoing) and reap the rewards from all the property, businesses and wealth their borrowers had signed over as 'collateral' in return for a 'loan' of fresh air. Most people think that money is somehow created by governments when it comes into existence from the start as a debt through banks 'lending' illusory money called credit. Yes, the very currency of exchange is a *debt* from day one issued as an interest-bearing loan. Why don't governments create money interest-free and lend it to their people interest-free? Governments are controlled by Sabbatians and the financial system is controlled by Sabbatians for whom interest-free money would be a nightmare come true. Sabbatians underpin their financial domination through their global network of central banks, including the privately-owned US Federal Reserve and Britain's Bank of England, and this is orchestrated by a privately-owned central bank coordination body called the Bank for International Settlements in Basle, Switzerland, created by the usual suspects including the Rockefellers and Rothschilds. Central bank chiefs don't answer to governments or the people. They answer to the Bank for International Settlements or, in other words, the Global Cult which is dominated today by Sabbatians.

Built-in disaster

There are so many constituent scams within the overall banking scam. When you take out a loan of thin-air credit only the amount of that loan is theoretically brought into circulation to add to the amount in circulation; but you are paying back the principle plus interest. The additional interest is not created and this means that with every 'loan' there is a shortfall in the money in circulation between what is borrowed and what has to be paid back. There is never even close to enough money in circulation to repay all outstanding public and private debt including interest. Coldly weaved in the very fabric of the system is the certainty that some will lose their homes, businesses and possessions to the banking 'lender'. This is less obvious in times of 'boom' when the amount of money in circulation (and the debt) is expanding through more people wanting and getting loans. When a downturn comes and the money supply contracts it becomes painfully obvious that there is not enough money to service all debt and interest. This is less obvious in times of 'boom' when the amount of money in circulation (and the debt) is expanding through more people wanting and getting loans. When a downturn comes and the money supply contracts and it becomes painfully obvious – as in 2008 and currently – that there is not enough money to service all debt and interest. Sabbatian banksters have been leading the human population through a calculated series of booms (more debt incurred) and busts (when the debt can't be repaid and the banks get the debtor's tangible wealth in exchange for non-existent 'credit'). With each 'bust' Sabbatian bankers have absorbed more of the world's tangible wealth and we end up with the One-percent. Governments are in bankruptcy levels of debt to the same system and are therefore owned by a system they do not control. The Federal Reserve, 'America's central bank', is privately-owned and American presidents only nominally appoint its chairman or woman to maintain the illusion that it's an arm of government. It's not. The 'Fed' is a cartel of private banks which handed billions to its associates and friends after the crash of 2008 and has been Sabbatian-controlled since it was manipulated into being in 1913 through the covert trickery of Rothschild banking agents Jacob Schiff and Paul

Warburg, and the Sabbatian Rockefeller family. Somehow from a Jewish population of two-percent and globally 0.2 percent (Sabbatian interlopers remember are far smaller) ultra-Zionists headed the Federal Reserve for 31 years between 1987 and 2018 in the form of Alan Greenspan, Bernard Bernanke and Janet Yellen (now Biden's Treasury Secretary) with Yellen's deputy chairman a Israeli-American dual citizen and ultra-Zionist Stanley Fischer, a former governor of the Bank of Israel. Ultra-Zionist Fed chiefs spanned the presidencies of Ronald Reagan ('Republican'), Father George Bush ('Republican'), Bill Clinton ('Democrat'), Boy George Bush ('Republican') and Barack Obama ('Democrat'). We should really add the pre-Greenspan chairman, Paul Adolph Volcker, 'appointed' by Jimmy Carter ('Democrat') who ran the Fed between 1979 and 1987 during the Carter and Reagan administrations before Greenspan took over. Volcker was a long-time associate and business partner of the Rothschilds. No matter what the 'party' officially in power the United States economy was directed by the same force. Here are members of the Obama, Trump and Biden administrations and see if you can make out a common theme.

Barack Obama ('Democrat')

Ultra-Zionists Robert Rubin, Larry Summers, and Timothy Geithner ran the US Treasury in the Clinton administration and two of them reappeared with Obama. Ultra-Zionist Fed chairman Alan Greenspan had manipulated the crash of 2008 through deregulation and jumped ship just before the disaster to make way for ultra-Zionist Bernard Bernanke to hand out trillions to Sabbatian 'too big to fail' banks and businesses, including the ubiquitous ultra-Zionist Goldman Sachs which has an ongoing staff revolving door operation between itself and major financial positions in government worldwide. Obama inherited the fallout of the crash when he took office in January, 2009, and fortunately he had the support of his ultra-Zionist White House Chief of Staff Rahm Emmanuel, son of a terrorist who helped to bomb Israel into being in 1948, and his ultra-Zionist senior adviser David Axelrod, chief strategist in Obama's two

successful presidential campaigns. Emmanuel, later mayor of Chicago and former senior fundraiser and strategist for Bill Clinton, is an example of the Sabbatian policy after Israel was established of migrating insider families to America so their children would be born American citizens. 'Obama' chose this financial team throughout his administration to respond to the Sabbatian-instigated crisis:

Timothy Geithner (ultra-Zionist) Treasury Secretary; Jacob J. Lew, Treasury Secretary; Larry Summers (ultra-Zionist), director of the White House National Economic Council; Paul Adolph Volcker (Rothschild business partner), chairman of the Economic Recovery Advisory Board; Peter Orszag (ultra-Zionist), director of the Office of Management and Budget overseeing all government spending; Penny Pritzker (ultra-Zionist), Commerce Secretary; Jared Bernstein (ultra-Zionist), chief economist and economic policy adviser to Vice President Joe Biden; Mary Schapiro (ultra-Zionist), chair of the Securities and Exchange Commission (SEC); Gary Gensler (ultra-Zionist), chairman of the Commodity Futures Trading Commission (CFTC); Sheila Bair (ultra-Zionist), chair of the Federal Deposit Insurance Corporation (FDIC); Karen Mills (ultra-Zionist), head of the Small Business Administration (SBA); Kenneth Feinberg (ultra-Zionist), Special Master for Executive [bail-out] Compensation. Feinberg would be appointed to oversee compensation (with strings) to 9/11 victims and families in a campaign to stop them having their day in court to question the official story. At the same time ultra-Zionist Bernard Bernanke was chairman of the Federal Reserve and these are only some of the ultra-Zionists with allegiance to Sabbatian-controlled Israel in the Obama government. Obama's biggest corporate donor was ultra-Zionist Goldman Sachs which had employed many in his administration.

Donald Trump ('Republican')

Trump claimed to be an outsider (he wasn't) who had come to 'drain the swamp'. He embarked on this goal by immediately appointing ultra-Zionist Steve Mnuchin, a Goldman Sachs employee for 17

years, as his Treasury Secretary. Others included Gary Cohn (ultra-Zionist), chief operating officer of Goldman Sachs, his first Director of the National Economic Council and chief economic adviser, who was later replaced by Larry Kudlow (ultra-Zionist). Trump's senior adviser throughout his four years in the White House was his sinister son-in-law Jared Kushner, a life-long friend of Israel Prime Minister Benjamin Netanyahu. Kushner is the son of a convicted crook who was pardoned by Trump in his last days in office. Other ultra-Zionists in the Trump administration included: Stephen Miller, Senior Policy Adviser; Avrahm Berkowitz, Deputy Adviser to Trump and his Senior Adviser Jared Kushner; Ivanka Trump, Adviser to the President, who converted to Judaism when she married Jared Kushner; David Friedman, Trump lawyer and Ambassador to Israel; Jason Greenblatt, Trump Organization executive vice president and chief legal officer, who was made Special Representative for International Negotiations and the Israeli-Palestinian Conflict; Rod Rosenstein, Deputy Attorney General; Elliot Abrams, Special Representative for Venezuela, then Iran; John Eisenberg, National Security Council Legal Adviser and Deputy Council to the President for National Security Affairs; Anne Neuberger, Deputy National Manager, National Security Agency; Ezra Cohen-Watnick, Acting Under Secretary of Defense for Intelligence; Elan Carr, Special Envoy to monitor and combat anti-Semitism; Len Khodorkovsky, Deputy Special Envoy to monitor and combat anti-Semitism; Reed Cordish, Assistant to the President, Intragovernmental and Technology Initiatives. Trump Vice President Mike Pence and Secretary of State Mike Pompeo, both Christian Zionists, were also vehement supporters of Israel and its goals and ambitions.

Donald 'free-speech believer' Trump pardoned a number of financial and violent criminals while ignoring calls to pardon Julian Assange and Edward Snowden whose crimes are revealing highly relevant information about government manipulation and corruption and the widespread illegal surveillance of the American people by US 'security' agencies. It's so good to know that Trump is on the side of freedom and justice and not mega-criminals with

allegiance to Sabbatian-controlled Israel. These included a pardon for Israeli spy Jonathan Pollard who was jailed for life in 1987 under the Espionage Act. Aviem Sella, the Mossad agent who recruited Pollard, was also pardoned by Trump while Assange sat in jail and Snowden remained in exile in Russia. Sella had 'fled' (was helped to escape) to Israel in 1987 and was never extradited despite being charged under the Espionage Act. A Trump White House statement said that Sella's clemency had been 'supported by Benjamin Netanyahu, Ron Dermer, Israel's US Ambassador, David Friedman, US Ambassador to Israel and Miriam Adelson, wife of leading Trump donor Sheldon Adelson who died shortly before. Other friends of Jared Kushner were pardoned along with Sholom Weiss who was believed to be serving the longest-ever white-collar prison sentence of more than 800 years in 2000. The sentence was commuted of Ponzi-schemer Eliyahu Weinstein who defrauded Jews and others out of \$200 million. I did mention that Assange and Snowden were ignored, right? Trump gave Sabbatians almost everything they asked for in military and political support, moving the US Embassy from Tel Aviv to Jerusalem with its critical symbolic and literal implications for Palestinian statehood, and the 'deal of the Century' designed by Jared Kushner and David Friedman which gave the Sabbatian Israeli government the green light to substantially expand its already widespread program of building illegal Jewish-only settlements in the occupied land of the West Bank. This made a two-state 'solution' impossible by seizing all the land of a potential Palestinian homeland and that had been the plan since 1948 and then 1967 when the Arab-controlled Gaza Strip, West Bank, Sinai Peninsula and Syrian Golan Heights were occupied by Israel. All the talks about talks and road maps and delays have been buying time until the West Bank was physically occupied by Israeli real estate. Trump would have to be a monumentally ill-informed idiot not to see that this was the plan he was helping to complete. The Trump administration was in so many ways the Kushner administration which means the Netanyahu administration which means the Sabbatian administration. I understand why many opposing Cult fascism in all its forms gravitated to Trump, but he

was a crucial part of the Sabbatian plan and I will deal with this in the next chapter.

Joe Biden ('Democrat')

A barely cognitive Joe Biden took over the presidency in January, 2021, along with his fellow empty shell, Vice-President Kamala Harris, as the latest Sabbatian gofers to enter the White House. Names on the door may have changed and the 'party' – the force behind them remained the same as Zionists were appointed to a stream of pivotal areas relating to Sabbatian plans and policy. They included: Janet Yellen, Treasury Secretary, former head of the Federal Reserve, and still another ultra-Zionist running the US Treasury after Mnuchin (Trump), Lew and Geithner (Obama), and Summers and Rubin (Clinton); Anthony Blinken, Secretary of State; Wendy Sherman, Deputy Secretary of State (so that's 'Biden's' Sabbatian foreign policy sorted); Jeff Zients, White House coronavirus coordinator; Rochelle Walensky, head of the Centers for Disease Control; Rachel Levine, transgender deputy health secretary (that's 'Covid' hoax policy under control); Merrick Garland, Attorney General; Alejandro Mayorkas, Secretary of Homeland Security; Cass Sunstein, Homeland Security with responsibility for new immigration laws; Avril Haines, Director of National Intelligence; Anne Neuberger, National Security Agency cybersecurity director (note, cybersecurity); David Cohen, CIA Deputy Director; Ronald Klain, Biden's Chief of Staff (see Rahm Emanuel); Eric Lander, a 'leading geneticist', Office of Science and Technology Policy director (see Smart Grid, synthetic biology agenda); Jessica Rosenworcel, acting head of the Federal Communications Commission (FCC) which controls Smart Grid technology policy and electromagnetic communication systems including 5G. How can it be that so many pivotal positions are held by two-percent of the American population and 0.2 percent of the world population administration after administration no matter who is the president and what is the party? It's a coincidence? Of course it's not and this is why Sabbatians have built their colossal global web of interlocking 'anti-

hate' hate groups to condemn anyone who asks these glaring questions as an 'anti-Semite'. The way that Jewish people horrifically abused in Sabbatian-backed Nazi Germany are exploited to this end is stomach-turning and disgusting beyond words.

Political fusion

Sabbatian manipulation has reversed the roles of Republicans and Democrats and the same has happened in Britain with the Conservative and Labour Parties. Republicans and Conservatives were always labelled the 'right' and Democrats and Labour the 'left', but look at the policy positions now and the Democrat-Labour 'left' has moved further to the 'right' than Republicans and Conservatives under the banner of 'Woke', the Cult-created far-right tyranny. Where once the Democrat-Labour 'left' defended free speech and human rights they now seek to delete them and as I said earlier despite the 'Covid' fascism of the Jackboot Johnson Conservative government in the UK the Labour Party of leader Keir Starmer demanded even more extreme measures. The Labour Party has been very publicly absorbed by Sabbatians after a political and media onslaught against the previous leader, the weak and inept Jeremy Corbyn, over made-up allegations of 'anti-Semitism' both by him and his party. The plan was clear with this 'anti-Semite' propaganda and what was required in response was a swift and decisive 'fuck off' from Corbyn and a statement to expose the Anti-Semitism Industry (Sabbatian) attempt to silence Labour criticism of the Israeli government (Sabbatians) and purge the party of all dissent against the extremes of ultra-Zionism (Sabbatians). Instead Corbyn and his party fell to their knees and appeased the abusers which, by definition, is impossible. Appeasing one demand leads only to a new demand to be appeased until takeover is complete. Like I say – 'fuck off' would have been a much more effective policy and I have used it myself with great effect over the years when Sabbatians are on my case which is most of the time. I consider that fact a great compliment, by the way. The outcome of the Labour Party capitulation is that we now have a Sabbatian-controlled

Conservative Party 'opposed' by a Sabbatian-controlled Labour Party in a one-party Sabbatian state that hurtles towards the extremes of tyranny (the Sabbatian cult agenda). In America the situation is the same. Labour's Keir Starmer spends his days on his knees with his tongue out pointing to Tel Aviv, or I guess now Jerusalem, while Boris Johnson has an 'anti-Semitism czar' in the form of former Labour MP John Mann who keeps Starmer company on his prayer mat.

Sabbatian influence can be seen in Jewish members of the Labour Party who have been ejected for criticism of Israel including those from families that suffered in Nazi Germany. Sabbatians despise real Jewish people and target them even more harshly because it is so much more difficult to dub them 'anti-Semitic' although in their desperation they do try.

CHAPTER THREE

The Pushbacker sting

*Until you realize how easy it is for your mind to be manipulated, you
remain the puppet of someone else's game*

Evita Ochel

I will use the presidencies of Trump and Biden to show how the manipulation of the one-party state plays out behind the illusion of political choice across the world. No two presidencies could – on the face of it – be more different and apparently at odds in terms of direction and policy.

A Renegade Mind sees beyond the obvious and focuses on outcomes and consequences and not image, words and waffle. The Cult embarked on a campaign to divide America between those who blindly support its agenda (the mentality known as 'Woke') and those who are pushing back on where the Cult and its Sabbatians want to go. This presents infinite possibilities for dividing and ruling the population by setting them at war with each other and allows a perceptual ring fence of demonisation to encircle the Pushbackers in a modern version of the Little Big Horn in 1876 when American cavalry led by Lieutenant Colonel George Custer were drawn into a trap, surrounded and killed by Native American tribes defending their land of thousands of years from being seized by the government. In this modern version the roles are reversed and it's those defending themselves from the Sabbatian government who are surrounded and the government that's seeking to destroy them. This trap was set years ago and to explain how we must return to 2016

and the emergence of Donald Trump as a candidate to be President of the United States. He set out to overcome the best part of 20 other candidates in the Republican Party before and during the primaries and was not considered by many in those early stages to have a prayer of living in the White House. The Republican Party was said to have great reservations about Trump and yet somehow he won the nomination. When you know how American politics works – politics in general – there is no way that Trump could have become the party's candidate unless the Sabbatian-controlled 'Neocons' that run the Republican Party wanted that to happen. We saw the proof in emails and documents made public by WikiLeaks that the Democratic Party hierarchy, or Democons, systematically undermined the campaign of Bernie Sanders to make sure that Sabbatian gofer Hillary Clinton won the nomination to be their presidential candidate. If the Democons could do that then the Neocons in the Republican Party could have derailed Trump in the same way. But they didn't and at that stage I began to conclude that Trump could well be the one chosen to be president. If that was the case the 'why' was pretty clear to see – the goal of dividing America between Cult agenda-supporting Wokers and Pushbackers who gravitated to Trump because he was telling them what they wanted to hear. His constituency of support had been increasingly ignored and voiceless for decades and profoundly through the eight years of Sabbatian puppet Barack Obama. Now here was someone speaking their language of pulling back from the incessant globalisation of political and economic power, the exporting of American jobs to China and elsewhere by 'American' (Sabbatian) corporations, the deletion of free speech, and the mass immigration policies that had further devastated job opportunities for the urban working class of all races and the once American heartlands of the Midwest.

Beware the forked tongue

Those people collectively sighed with relief that at last a political leader was apparently on their side, but another trait of the Renegade Mind is that you look even harder at people telling you

what you want to hear than those who are telling you otherwise. Obviously as I said earlier people wish what they want to hear to be true and genuine and they are much more likely to believe that than someone saying what they don't want to hear and don't want to be true. Sales people are taught to be skilled in eliciting by calculated questioning what their customers want to hear and repeating that back to them as their own opinion to get their targets to like and trust them. Assets of the Cult are also sales people in the sense of selling perception. To read Cult manipulation you have to play the long and expanded game and not fall for the Vaudeville show of party politics. Both American parties are vehicles for the Cult and they exploit them in different ways depending on what the agenda requires at that moment. Trump and the Republicans were used to be the focus of dividing America and isolating Pushbackers to open the way for a Biden presidency to become the most extreme in American history by advancing the full-blown Woke (Cult) agenda with the aim of destroying and silencing Pushbackers now labelled Nazi Trump supporters and white supremacists.

Sabbatians wanted Trump in office for the reasons described by ultra-Zionist Saul Alinsky (1909-1972) who was promoting the Woke philosophy through 'community organising' long before anyone had heard of it. In those days it still went by its traditional name of Marxism. The reason for the manipulated Trump phenomenon was laid out in Alinsky's 1971 book, *Rules for Radicals*, which was his blueprint for overthrowing democratic and other regimes and replacing them with Sabbatian Marxism. Not surprisingly his to-do list was evident in the Sabbatian French and Russian 'Revolutions' and that in China which will become very relevant in the next chapter about the 'Covid' hoax. Among Alinsky's followers have been the deeply corrupt Barack Obama, House Speaker Nancy Pelosi and Hillary Clinton who described him as a 'hero'. All three are Sabbatian stooges with Pelosi personifying the arrogant corrupt idiocy that so widely fronts up for the Cult inner core. Predictably as a Sabbatian advocate of the 'light-bringer' Alinsky features Lucifer on the dedication page of his book as the original radical who gained

his own kingdom ('Earth' as we shall see). One of Alinsky's golden radical rules was to pick an individual and focus all attention, hatred and blame on them and not to target faceless bureaucracies and corporations. *Rules for Radicals* is really a Sabbatian handbook with its contents repeatedly employed all over the world for centuries and why wouldn't Sabbatians bring to power their designer-villain to be used as the individual on which all attention, hatred and blame was bestowed? This is what they did and the only question for me is how much Trump knew that and how much he was manipulated. A bit of both, I suspect. This was Alinsky's Trump technique from a man who died in 1972. The technique has spanned history:

Pick the target, freeze it, personalize it, polarize it. Don't try to attack abstract corporations or bureaucracies. Identify a responsible individual. Ignore attempts to shift or spread the blame.

From the moment Trump came to illusory power everything was about him. It wasn't about Republican policy or opinion, but all about Trump. Everything he did was presented in negative, derogatory and abusive terms by the Sabbatian-dominated media led by Cult operations such as CNN, MSNBC, *The New York Times* and the Jeff Bezos-owned *Washington Post* – 'Pick the target, freeze it, personalize it, polarize it.' Trump was turned into a demon to be vilified by those who hated him and a demi-god loved by those who worshipped him. This, in turn, had his supporters, too, presented as equally demonic in preparation for the punchline later down the line when Biden was about to take office. It was here's a Trump, there's a Trump, everywhere a Trump, Trump. Virtually every news story or happening was filtered through the lens of 'The Donald'. You loved him or hated him and which one you chose was said to define you as Satan's spawn or a paragon of virtue. Even supporting some Trump policies or statements and not others was enough for an assault on your character. No shades of grey were or are allowed. Everything is black and white (literally and figuratively). A Californian I knew had her head utterly scrambled by her hatred for Trump while telling people they should love each other. She was so totally consumed by

Trump Derangement Syndrome as it became to be known that this glaring contradiction would never have occurred to her. By definition anyone who criticised Trump or praised his opponents was a hero and this lady described Joe Biden as 'a kind, honest gentleman' when he's a provable liar, mega-crook and vicious piece of work to boot. Sabbatians had indeed divided America using Trump as the fall-guy and all along the clock was ticking on the consequences for his supporters.

In hock to his masters

Trump gave Sabbatians via Israel almost everything they wanted in his four years. Ask and you shall receive was the dynamic between himself and Benjamin Netanyahu orchestrated by Trump's ultra-Zionist son-in-law Jared Kushner, his ultra-Zionist Ambassador to Israel, David Friedman, and ultra-Zionist 'Israel adviser', Jason Greenblatt. The last two were central to the running and protecting from collapse of his business empire, the Trump Organisation, and colossal business failures made him forever beholding to Sabbatian networks that bailed him out. By the start of the 1990s Trump owed \$4 billion to banks that he couldn't pay and almost \$1 billion of that was down to him personally and not his companies. This mega-disaster was the result of building two new casinos in Atlantic City and buying the enormous Taj Mahal operation which led to crippling debt payments. He had borrowed fantastic sums from 72 banks with major Sabbatian connections and although the scale of debt should have had him living in a tent alongside the highway they never foreclosed. A plan was devised to lift Trump from the mire by BT Securities Corporation and Rothschild Inc. and the case was handled by Wilber Ross who had worked for the Rothschilds for 27 years. Ross would be named US Commerce Secretary after Trump's election. Another crucial figure in saving Trump was ultra-Zionist 'investor' Carl Icahn who bought the Taj Mahal casino. Icahn was made special economic adviser on financial regulation in the Trump administration. He didn't stay long but still managed to find time to make a tidy sum of a reported \$31.3 million when he sold his

holdings affected by the price of steel three days before Trump imposed a 235 percent tariff on steel imports. What amazing bits of luck these people have. Trump and Sabbatian operatives have long had a close association and his mentor and legal adviser from the early 1970s until 1986 was the dark and genetically corrupt ultra-Zionist Roy Cohn who was chief counsel to Senator Joseph McCarthy's 'communist' witch-hunt in the 1950s. *Esquire* magazine published an article about Cohn with the headline 'Don't mess with Roy Cohn'. He was described as the most feared lawyer in New York and 'a ruthless master of dirty tricks ... [with] ... more than one Mafia Don on speed dial'. Cohn's influence, contacts, support and protection made Trump a front man for Sabbatians in New York with their connections to one of Cohn's many criminal employers, the 'Russian' Sabbatian Mafia. Israel-centric media mogul Rupert Murdoch was introduced to Trump by Cohn and they started a long friendship. Cohn died in 1986 weeks after being disbarred for unethical conduct by the Appellate Division of the New York State Supreme Court. The wheels of justice do indeed run slow given the length of Cohn's crooked career.

QAnon-sense

We are asked to believe that Donald Trump with his fundamental connections to Sabbatian networks and operatives has been leading the fight to stop the Sabbatian agenda for the fascistic control of America and the world. Sure he has. A man entrapped during his years in the White House by Sabbatian operatives and whose biggest financial donor was casino billionaire Sheldon Adelson who was Sabbatian to his DNA?? Oh, do come on. Trump has been used to divide America and isolate Pushbackers on the Cult agenda under the heading of 'Trump supporters', 'insurrectionists' and 'white supremacists'. The US Intelligence/Mossad Psyop or psychological operation known as QAnon emerged during the Trump years as a central pillar in the Sabbatian campaign to lead Pushbackers into the trap set by those that wished to destroy them. I knew from the start that QAnon was a scam because I had seen the same scenario many

times before over 30 years under different names and I had written about one in particular in the books. 'Not again' was my reaction when QAnon came to the fore. The same script is pulled out every few years and a new name added to the letterhead. The story always takes the same form: 'Insiders' or 'the good guys' in the government-intelligence-military 'Deep State' apparatus were going to instigate mass arrests of the 'bad guys' which would include the Rockefellers, Rothschilds, Barack Obama, Hillary Clinton, George Soros, etc., etc. Dates are given for when the 'good guys' are going to move in, but the dates pass without incident and new dates are given which pass without incident. The central message to Pushbackers in each case is that they don't have to do anything because there is 'a plan' and it is all going to be sorted by the 'good guys' on the inside. 'Trust the plan' was a QAnon mantra when the only plan was to misdirect Pushbackers into putting their trust in a Psyop they believed to be real. Beware, beware, those who tell you what you want to hear and always check it out. Right up to Biden's inauguration QAnon was still claiming that 'the Storm' was coming and Trump would stay on as president when Biden and his cronies were arrested and jailed. It was never going to happen and of course it didn't, but what did happen as a result provided that punchline to the Sabbatian Trump/QAnon Psyop.

On January 6th, 2021, a very big crowd of Trump supporters gathered in the National Mall in Washington DC down from the Capitol Building to protest at what they believed to be widespread corruption and vote fraud that stopped Trump being re-elected for a second term as president in November, 2020. I say as someone that does not support Trump or Biden that the evidence is clear that major vote-fixing went on to favour Biden, a man with cognitive problems so advanced he can often hardly string a sentence together without reading the words written for him on the Teleprompter. Glaring ballot discrepancies included serious questions about electronic voting machines that make vote rigging a comparative cinch and hundreds of thousands of paper votes that suddenly appeared during already advanced vote counts and virtually all of

them for Biden. Early Trump leads in crucial swing states suddenly began to close and disappear. The pandemic hoax was used as the excuse to issue almost limitless numbers of mail-in ballots with no checks to establish that the recipients were still alive or lived at that address. They were sent to streams of people who had not even asked for them. Private organisations were employed to gather these ballots and who knows what they did with them before they turned up at the counts. The American election system has been manipulated over decades to become a sick joke with more holes than a Swiss cheese for the express purpose of dictating the results. Then there was the criminal manipulation of information by Sabbatian tech giants like Facebook, Twitter and Google-owned YouTube which deleted pro-Trump, anti-Biden accounts and posts while everything in support of Biden was left alone. Sabbatians wanted Biden to win because after the dividing of America it was time for full-on Woke and every aspect of the Cult agenda to be unleashed.

Hunter gatherer

Extreme Silicon Valley bias included blocking information by the *New York Post* exposing a Biden scandal that should have ended his bid for president in the final weeks of the campaign. Hunter Biden, his monumentally corrupt son, is reported to have sent a laptop to be repaired at a local store and failed to return for it. Time passed until the laptop became the property of the store for non-payment of the bill. When the owner saw what was on the hard drive he gave a copy to the FBI who did nothing even though it confirmed widespread corruption in which the Joe Biden family were using his political position, especially when he was vice president to Obama, to make multiple millions in countries around the world and most notably Ukraine and China. Hunter Biden's one-time business partner Tony Bobulinski went public when the story broke in the *New York Post* to confirm the corruption he saw and that Joe Biden not only knew what was going on he also profited from the spoils. Millions were handed over by a Chinese company with close

connections – like all major businesses in China – to the Chinese communist party of President Xi Jinping. Joe Biden even boasted at a meeting of the Cult's World Economic Forum that as vice president he had ordered the government of Ukraine to fire a prosecutor. What he didn't mention was that the same man just happened to be investigating an energy company which was part of Hunter Biden's corrupt portfolio. The company was paying him big bucks for no other reason than the influence his father had. Overnight Biden's presidential campaign should have been over given that he had lied publicly about not knowing what his son was doing. Instead almost the entire Sabbatian-owned mainstream media and Sabbatian-owned Silicon Valley suppressed circulation of the story. This alone went a mighty way to rigging the election of 2020. Cult assets like Mark Zuckerberg at Facebook also spent hundreds of millions to be used in support of Biden and vote 'administration'.

The Cult had used Trump as the focus to divide America and was now desperate to bring in moronic, pliable, corrupt Biden to complete the double-whammy. No way were they going to let little things like the will of the people thwart their plan. Silicon Valley widely censored claims that the election was rigged because it *was* rigged. For the same reason anyone claiming it was rigged was denounced as a 'white supremacist' including the pathetically few Republican politicians willing to say so. Right across the media where the claim was mentioned it was described as a 'false claim' even though these excuses for 'journalists' would have done no research into the subject whatsoever. Trump won seven million more votes than any sitting president had ever achieved while somehow a cognitively-challenged soon to be 78-year-old who was hidden away from the public for most of the campaign managed to win more votes than any presidential candidate in history. It makes no sense. You only had to see election rallies for both candidates to witness the enthusiasm for Trump and the apathy for Biden. Tens of thousands would attend Trump events while Biden was speaking in empty car parks with often only television crews attending and framing their shots to hide the fact that no one was there. It was pathetic to see

footage come to light of Biden standing at a podium making speeches only to TV crews and party fixers while reading the words written for him on massive Teleprompter screens. So, yes, those protestors on January 6th had a point about election rigging, but some were about to walk into a trap laid for them in Washington by the Cult Deep State and its QAnon Psyop. This was the Capitol Hill riot ludicrously dubbed an 'insurrection'.

The spider and the fly

Renegade Minds know there are not two 'sides' in politics, only one side, the Cult, working through all 'sides'. It's a stage show, a puppet show, to direct the perceptions of the population into focusing on diversions like parties and candidates while missing the puppeteers with their hands holding all the strings. The Capitol Hill 'insurrection' brings us back to the Little Big Horn. Having created two distinct opposing groupings – Woke and Pushbackers – the trap was about to be sprung. Pushbackers were to be encircled and isolated by associating them all in the public mind with Trump and then labelling Trump as some sort of Confederate leader. I knew immediately that the Capitol riot was a set-up because of two things. One was how easy the rioters got into the building with virtually no credible resistance and secondly I could see – as with the 'Covid' hoax in the West at the start of 2020 – how the Cult could exploit the situation to move its agenda forward with great speed. My experience of Cult techniques and activities over more than 30 years has showed me that while they do exploit situations they haven't themselves created this never happens with events of fundamental agenda significance. Every time major events giving cultists the excuse to rapidly advance their plan you find they are manipulated into being for the specific reason of providing that excuse – Problem-Reaction-Solution. Only a tiny minority of the huge crowd of Washington protestors sought to gain entry to the Capitol by smashing windows and breaching doors. That didn't matter. The whole crowd and all Pushbackers, even if they did not support Trump, were going to be lumped together as dangerous

insurrectionists and conspiracy theorists. The latter term came into widespread use through a CIA memo in the 1960s aimed at discrediting those questioning the nonsensical official story of the Kennedy assassination and it subsequently became widely employed by the media. It's still being used by inept 'journalists' with no idea of its origin to discredit anyone questioning anything that authority claims to be true. When you are perpetrating a conspiracy you need to discredit the very word itself even though the dictionary definition of conspiracy is merely 'the activity of secretly planning with other people to do something bad or illegal' and 'a general agreement to keep silent about a subject for the purpose of keeping it secret'. On that basis there are conspiracies almost wherever you look. For obvious reasons the Cult and its lapdog media have to claim there are no conspiracies even though the word appears in state laws as with conspiracy to defraud, to murder, and to corrupt public morals.

Agent provocateurs are widely used by the Cult Deep State to manipulate genuine people into acting in ways that suit the desired outcome. By genuine in this case I mean protestors genuinely supporting Trump and claims that the election was stolen. In among them, however, were agents of the state wearing the garb of Trump supporters and QAnon to pump-prime the Capital riot which some genuine Trump supporters naively fell for. I described the situation as 'Come into my parlour said the spider to the fly'. Leaflets appeared through the Woke paramilitary arm Antifa, the anti-fascist fascists, calling on supporters to turn up in Washington looking like Trump supporters even though they hated him. Some of those arrested for breaching the Capitol Building were sourced to Antifa and its stable mate Black Lives Matter. Both organisations are funded by Cult billionaires and corporations. One man charged for the riot was according to his lawyer a former FBI agent who had held top secret security clearance for 40 years. Attorney Thomas Plofchan said of his client, 66-year-old Thomas Edward Caldwell:

He has held a Top Secret Security Clearance since 1979 and has undergone multiple Special Background Investigations in support of his clearances. After retiring from the Navy, he

worked as a section chief for the Federal Bureau of Investigation from 2009-2010 as a GS-12 [mid-level employee].

He also formed and operated a consulting firm performing work, often classified, for U.S government customers including the US. Drug Enforcement Agency, Department of Housing and Urban Development, the US Coast Guard, and the US Army Personnel Command.

A judge later released Caldwell pending trial in the absence of evidence about a conspiracy or that he tried to force his way into the building. *The New York Post* reported a 'law enforcement source' as saying that 'at least two known Antifa members were spotted' on camera among Trump supporters during the riot while one of the rioters arrested was John Earle Sullivan, a seriously extreme Black Lives Matter Trump-hater from Utah who was previously arrested and charged in July, 2020, over a BLM-Antifa riot in which drivers were threatened and one was shot. Sullivan is the founder of Utah-based Insurgence USA which is an affiliate of the Cult-created-and-funded Black Lives Matter movement. Footage appeared and was then deleted by Twitter of Trump supporters calling out Antifa infiltrators and a group was filmed changing into pro-Trump clothing before the riot. Security at the building was *pathetic* – as planned. Colonel Leroy Fletcher Prouty, a man with long experience in covert operations working with the US security apparatus, once described the tell-tale sign to identify who is involved in an assassination. He said:

No one has to direct an assassination – it happens. The active role is played secretly by permitting it to happen. This is the greatest single clue. Who has the power to call off or reduce the usual security precautions?

This principle applies to many other situations and certainly to the Capitol riot of January 6th, 2021.

The sting

With such a big and potentially angry crowd known to be gathering near the Capitol the security apparatus would have had a major police detail to defend the building with National Guard troops on

standby given the strength of feeling among people arriving from all over America encouraged by the QAnon Psyop and statements by Donald Trump. Instead Capitol Police 'security' was flimsy, weak, and easily breached. The same number of officers was deployed as on a regular day and that is a blatant red flag. They were not staffed or equipped for a possible riot that had been an obvious possibility in the circumstances. No protective and effective fencing worth the name was put in place and there were no contingency plans. The whole thing was basically a case of standing aside and waving people in. Once inside police mostly backed off apart from one Capitol police officer who ridiculously shot dead unarmed Air Force veteran protestor Ashli Babbitt without a warning as she climbed through a broken window. The 'investigation' refused to name or charge the officer after what must surely be considered a murder in the circumstances. They just lifted a carpet and swept. The story was endlessly repeated about five people dying in the 'armed insurrection' when there was no report of rioters using weapons. Apart from Babbitt the other four died from a heart attack, strokes and apparently a drug overdose. Capitol police officer Brian Sicknick was reported to have died after being bludgeoned with a fire extinguisher when he was alive after the riot was over and died later of what the Washington Medical Examiner's Office said was a stroke. Sicknick had no external injuries. The lies were delivered like rapid fire. There was a narrative to build with incessant repetition of the lie until the lie became the accepted 'everybody knows that' truth. The 'Big Lie' technique of Nazi Propaganda Minister Joseph Goebbels is constantly used by the Cult which was behind the Nazis and is today behind the 'Covid' and 'climate change' hoaxes. Goebbels said:

If you tell a lie big enough and keep repeating it, people will eventually come to believe it. The lie can be maintained only for such time as the State can shield the people from the political, economic and/or military consequences of the lie. It thus becomes vitally important for the State to use all of its powers to repress dissent, for the truth is the mortal enemy of the lie, and thus by extension, the truth is the greatest enemy of the State.

Most protestors had a free run of the Capitol Building. This allowed pictures to be taken of rioters in iconic parts of the building including the Senate chamber which could be used as propaganda images against all Pushbackers. One Congresswoman described the scene as 'the worst kind of non-security anybody could ever imagine'. Well, the first part was true, but someone obviously did imagine it and made sure it happened. Some photographs most widely circulated featured people wearing QAnon symbols and now the Psyop would be used to dub all QAnon followers with the ubiquitous fit-all label of 'white supremacist' and 'insurrectionists'. When a Muslim extremist called Noah Green drove his car at two police officers at the Capitol Building killing one in April, 2021, there was no such political and media hysteria. They were just disappointed he wasn't white.

The witch-hunt

Government prosecutor Michael Sherwin, an aggressive, dark-eyed, professional Rottweiler led the 'investigation' and to call it over the top would be to understate reality a thousand fold. Hundreds were tracked down and arrested for the crime of having the wrong political views and people were jailed who had done nothing more than walk in the building, committed no violence or damage to property, took a few pictures and left. They were labelled a 'threat to the Republic' while Biden sat in the White House signing executive orders written for him that were dismantling 'the Republic'. Even when judges ruled that a mother and son should not be in jail the government kept them there. Some of those arrested have been badly beaten by prison guards in Washington and lawyers for one man said he suffered a fractured skull and was made blind in one eye. Meanwhile a woman is shot dead for no reason by a Capitol Police officer and we are not allowed to know who he is never mind what has happened to him although that will be *nothing*. The Cult's QAnon/Trump sting to identify and isolate Pushbackers and then target them on the road to crushing and deleting them was a resounding success. You would have thought the Russians had

invaded the building at gunpoint and lined up senators for a firing squad to see the political and media reaction. Congresswoman Alexandria Ocasio-Cortez is a child in a woman's body, a terrible-tuos, me, me, me, Woker narcissist of such proportions that words have no meaning. She said she thought she was going to die when 'insurrectionists' banged on her office door. It turned out she wasn't even in the Capitol Building when the riot was happening and the 'banging' was a Capitol Police officer. She referred to herself as a 'survivor' which is an insult to all those true survivors of violent and sexual abuse while she lives her pampered and privileged life talking drivel for a living. Her Woke colleague and fellow mega-narcissist Rashida Tlaib broke down describing the devastating effect on her, too, of *not being* in the building when the rioters were there. Ocasio-Cortez and Tlaib are members of a fully-Woke group of Congresswomen known as 'The Squad' along with Ilhan Omar and Ayanna Pressley. The Squad from what I can see can be identified by its vehement anti-white racism, anti-white men agenda, and, as always in these cases, the absence of brain cells on active duty.

The usual suspects were on the riot case immediately in the form of Democrat ultra-Zionist senators and operatives Chuck Schumer and Adam Schiff demanding that Trump be impeached for 'his part in the insurrection'. The same pair of prats had led the failed impeachment of Trump over the invented 'Russia collusion' nonsense which claimed Russia had helped Trump win the 2016 election. I didn't realise that Tel Aviv had been relocated just outside Moscow. I must find an up-to-date map. The Russia hoax was a Sabbatian operation to keep Trump occupied and impotent and to stop any rapport with Russia which the Cult wants to retain as a perceptual enemy to be pulled out at will. Puppet Biden began attacking Russia when he came to office as the Cult seeks more upheaval, division and war across the world. A two-year stage show 'Russia collusion inquiry' headed by the not-very-bright former 9/11 FBI chief Robert Mueller, with support from 19 lawyers, 40 FBI agents plus intelligence analysts, forensic accountants and other

staff, devoured tens of millions of dollars and found no evidence of Russia collusion which a ten-year-old could have told them on day one. Now the same moronic Schumer and Schiff wanted a second impeachment of Trump over the Capitol 'insurrection' (riot) which the arrested development of Schumer called another 'Pearl Harbor' while others compared it with 9/11 in which 3,000 died and, in the case of CNN, with the Rwandan genocide in the 1990s in which an estimated 500,000 to 600,000 were murdered, between 250, 000 and 500,000 women were raped, and populations of whole towns were hacked to death with machetes. To make those comparisons purely for Cult political reasons is beyond insulting to those that suffered and lost their lives and confirms yet again the callous inhumanity that we are dealing with. Schumer is a monumental idiot and so is Schiff, but they serve the Cult agenda and do whatever they're told so they get looked after. Talking of idiots – another inane man who spanned the Russia and Capitol impeachment attempts was Senator Eric Swalwell who had the nerve to accuse Trump of collusion with the Russians while sleeping with a Chinese spy called Christine Fang or 'Fang Fang' which is straight out of a Bond film no doubt starring Klaus Schwab as the bloke living on a secret island and controlling laser weapons positioned in space and pointing at world capitals. Fang Fang plays the part of Bond's infiltrator girlfriend which I'm sure she would enjoy rather more than sharing a bed with the brainless Swalwell, lying back and thinking of China. The FBI eventually warned Swalwell about Fang Fang which gave her time to escape back to the Chinese dictatorship. How very thoughtful of them. The second Trump impeachment also failed and hardly surprising when an impeachment is supposed to remove a sitting president and by the time it happened Trump was no longer president. These people are running your country America, well, officially anyway. Terrifying isn't it?

Outcomes tell the story - always

The outcome of all this – and it's the *outcome* on which Renegade Minds focus, not the words – was that a vicious, hysterical and

obviously pre-planned assault was launched on Pushbackers to censor, silence and discredit them and even targeted their right to earn a living. They have since been condemned as 'domestic terrorists' that need to be treated like Al-Qaeda and Islamic State. 'Domestic terrorists' is a label the Cult has been trying to make stick since the period of the Oklahoma bombing in 1995 which was blamed on 'far-right domestic terrorists'. If you read *The Trigger* you will see that the bombing was clearly a Problem-Reaction-Solution carried out by the Deep State during a Bill Clinton administration so corrupt that no dictionary definition of the term would even nearly suffice. Nearly 30, 000 troops were deployed from all over America to the empty streets of Washington for Biden's inauguration. Ten thousand of them stayed on with the pretext of protecting the capital from insurrectionists when it was more psychological programming to normalise the use of the military in domestic law enforcement in support of the Cult plan for a police-military state. Biden's fascist administration began a purge of 'wrong-thinkers' in the military which means anyone that is not on board with Woke. The Capitol Building was surrounded by a fence with razor wire and the Land of the Free was further symbolically and literally dismantled. The circle was completed with the installation of Biden and the exploitation of the QAnon Psyop.

America had never been so divided since the civil war of the 19th century, Pushbackers were isolated and dubbed terrorists and now, as was always going to happen, the Cult immediately set about deleting what little was left of freedom and transforming American society through a swish of the hand of the most controlled 'president' in American history leading (officially at least) the most extreme regime since the country was declared an independent state on July 4th, 1776. Biden issued undebated, dictatorial executive orders almost by the hour in his opening days in office across the whole spectrum of the Cult wish-list including diluting controls on the border with Mexico allowing thousands of migrants to illegally enter the United States to transform the demographics of America and import an election-changing number of perceived Democrat

voters. Then there were Biden deportation amnesties for the already illegally resident (estimated to be as high as 20 or even 30 million). A bill before Congress awarded American citizenship to anyone who could prove they had worked in agriculture for just 180 days in the previous two years as 'Big Ag' secured its slave labour long-term. There were the plans to add new states to the union such as Puerto Rico and making Washington DC a state. They are all parts of a plan to ensure that the Cult-owned Woke Democrats would be permanently in power.

Border – what border?

I have exposed in detail in other books how mass immigration into the United States and Europe is the work of Cult networks fuelled by the tens of billions spent to this and other ends by George Soros and his global Open Society (open borders) Foundations. The impact can be seen in America alone where the population has increased by *100 million* in little more than 30 years mostly through immigration. I wrote in *The Answer* that the plan was to have so many people crossing the southern border that the numbers become unstoppable and we are now there under Cult-owned Biden. El Salvador in Central America puts the scale of what is happening into context. A third of the population now lives in the United States, much of it illegally, and many more are on the way. The methodology is to crush Central and South American countries economically and spread violence through machete-wielding psychopathic gangs like MS-13 based in El Salvador and now operating in many American cities. Biden-imposed lax security at the southern border means that it is all but open. He said before his 'election' that he wanted to see a surge towards the border if he became president and that was the green light for people to do just that after election day to create the human disaster that followed for both America and the migrants. When that surge came the imbecilic Alexandria Ocasio-Cortez said it wasn't a 'surge' because they are 'children, not insurgents' and the term 'surge' (used by Biden) was a claim of 'white supremacists'.

This disingenuous lady may one day enter the realm of the most basic intelligence, but it won't be any time soon.

Sabbatians and the Cult are in the process of destroying America by importing violent people and gangs in among the genuine to terrorise American cities and by overwhelming services that cannot cope with the sheer volume of new arrivals. Something similar is happening in Europe as Western society in general is targeted for demographic and cultural transformation and upheaval. The plan demands violence and crime to create an environment of intimidation, fear and division and Soros has been funding the election of district attorneys across America who then stop prosecuting many crimes, reduce sentences for violent crimes and free as many violent criminals as they can. Sabbatians are creating the chaos from which order – their order – can respond in a classic Problem-Reaction-Solution. A Freemasonic moto says 'Ordo Ab Chao' (Order out of Chaos) and this is why the Cult is constantly creating chaos to impose a new 'order'. Here you have the reason the Cult is constantly creating chaos. The 'Covid' hoax can be seen with those entering the United States by plane being forced to take a 'Covid' test while migrants flooding through southern border processing facilities do not. Nothing is put in the way of mass migration and if that means ignoring the government's own 'Covid' rules then so be it. They know it's all bullshit anyway. Any pushback on this is denounced as 'racist' by Wokers and Sabbatian fronts like the ultra-Zionist Anti-Defamation League headed by the appalling Jonathan Greenblatt which at the same time argues that Israel should not give citizenship and voting rights to more Palestinian Arabs or the 'Jewish population' (in truth the Sabbatian network) will lose control of the country.

Society-changing numbers

Biden's masters have declared that countries like El Salvador are so dangerous that their people must be allowed into the United States for humanitarian reasons when there are fewer murders in large parts of many Central American countries than in US cities like

Baltimore. That is not to say Central America cannot be a dangerous place and Cult-controlled American governments have been making it so since way back, along with the dismantling of economies, in a long-term plan to drive people north into the United States. Parts of Central America are very dangerous, but in other areas the story is being greatly exaggerated to justify relaxing immigration criteria. Migrants are being offered free healthcare and education in the United States as another incentive to head for the border and there is no requirement to be financially independent before you can enter to prevent the resources of America being drained. You can't blame migrants for seeking what they believe will be a better life, but they are being played by the Cult for dark and nefarious ends. The numbers since Biden took office are huge. In February, 2021, more than 100,000 people were known to have tried to enter the US illegally through the southern border (it was 34,000 in the same month in 2020) and in March it was 170,000 – a 418 percent increase on March, 2020. These numbers are only known people, not the ones who get in unseen. The true figure for migrants illegally crossing the border in a single month was estimated by one congressman at 250,000 and that number will only rise under Biden's current policy. Gangs of murdering drug-running thugs that control the Mexican side of the border demand money – thousands of dollars – to let migrants cross the Rio Grande into America. At the same time gun battles are breaking out on the border several times a week between rival Mexican drug gangs (which now operate globally) who are equipped with sophisticated military-grade weapons, grenades and armoured vehicles. While the Capitol Building was being 'protected' from a non-existent 'threat' by thousands of troops, and others were still deployed at the time in the Cult Neocon war in Afghanistan, the southern border of America was left to its fate. This is not incompetence, it is cold calculation.

By March, 2021, there were 17,000 unaccompanied children held at border facilities and many of them are ensnared by people traffickers for paedophile rings and raped on their journey north to America. This is not conjecture – this is fact. Many of those designated

children are in reality teenage boys or older. Meanwhile Wokers posture their self-purity for encouraging poor and tragic people to come to America and face this nightmare both on the journey and at the border with the disgusting figure of House Speaker Nancy Pelosi giving disingenuous speeches about caring for migrants. The woman's evil. Wokers condemned Trump for having children in cages at the border (so did Obama, *Shhhh*), but now they are sleeping on the floor without access to a shower with one border facility 729 percent over capacity. The Biden insanity even proposed flying migrants from the southern border to the northern border with Canada for 'processing'. The whole shambles is being overseen by ultra-Zionist Secretary of Homeland Security, the moronic liar Alejandro Mayorkas, who banned news cameras at border facilities to stop Americans seeing what was happening. Mayorkas said there was not a ban on news crews; it was just that they were not allowed to film. Alongside him at Homeland Security is another ultra-Zionist Cass Sunstein appointed by Biden to oversee new immigration laws. Sunstein despises conspiracy researchers to the point where he suggests they should be banned or *taxed* for having such views. The man is not bonkers or anything. He's perfectly well-adjusted, but adjusted to what is the question. Criticise what is happening and you are a 'white supremacist' when earlier non-white immigrants also oppose the numbers which effect their lives and opportunities. Black people in poor areas are particularly damaged by uncontrolled immigration and the increased competition for work opportunities with those who will work for less. They are also losing voting power as Hispanics become more dominant in former black areas. It's a downward spiral for them while the billionaires behind the policy drone on about how much they care about black people and 'racism'. None of this is about compassion for migrants or black people – that's just wind and air. Migrants are instead being mercilessly exploited to transform America while the countries they leave are losing their future and the same is true in Europe. Mass immigration may now be the work of Woke Democrats, but it can be traced back to the 1986 Immigration Reform and Control Act (it

wasn't) signed into law by Republican hero President Ronald Reagan which gave amnesty to millions living in the United States illegally and other incentives for people to head for the southern border. Here we have the one-party state at work again.

Save me syndrome

Almost every aspect of what I have been exposing as the Cult agenda was on display in even the first days of 'Biden' with silencing of Pushbackers at the forefront of everything. A Renegade Mind will view the Trump years and QAnon in a very different light to their supporters and advocates as the dots are connected. The QAnon/Trump Psyop has given the Cult all it was looking for. We may not know how much, or little, that Trump realised he was being used, but that's a side issue. This pincer movement produced the desired outcome of dividing America and having Pushbackers isolated. To turn this around we have to look at new routes to empowerment which do not include handing our power to other people and groups through what I will call the 'Save Me Syndrome' – 'I want someone else to do it so that I don't have to'. We have seen this at work throughout human history and the QAnon/Trump Psyop is only the latest incarnation alongside all the others. Religion is an obvious expression of this when people look to a 'god' or priest to save them or tell them how to be saved and then there are 'save me' politicians like Trump. Politics is a diversion and not a 'saviour'. It is a means to block positive change, not make it possible.

Save Me Syndrome always comes with the same repeating theme of handing your power to whom or what you believe will save you while your real 'saviour' stares back from the mirror every morning. Renegade Minds are constantly vigilant in this regard and always asking the question 'What can I do?' rather than 'What can someone else do for me?' Gandhi was right when he said: 'You must be the change you want to see in the world.' We are indeed the people we have been waiting for. We are presented with a constant raft of reasons to concede that power to others and forget where the real power is. Humanity has the numbers and the Cult does not. It has to

use diversion and division to target the unstoppable power that comes from unity. Religions, governments, politicians, corporations, media, QAnon, are all different manifestations of this power-diversion and dilution. Refusing to give your power to governments and instead handing it to Trump and QAnon is not to take a new direction, but merely to recycle the old one with new names on the posters. I will explore this phenomenon as we proceed and how to break the cycles and recycles that got us here through the mists of repeating perception and so repeating history.

For now we shall turn to the most potent example in the entire human story of the consequences that follow when you give your power away. I am talking, of course, of the 'Covid' hoax.

CHAPTER FOUR

'Covid': Calculated catastrophe

Facts are threatening to those invested in fraud
DaShanne Stokes

We can easily unravel the real reason for the 'Covid pandemic' hoax by employing the Renegade Mind methodology that I have outlined this far. We'll start by comparing the long-planned Cult outcome with the 'Covid pandemic' outcome. Know the outcome and you'll see the journey.

I have highlighted the plan for the Hunger Games Society which has been in my books for so many years with the very few controlling the very many through ongoing dependency. To create this dependency it is essential to destroy independent livelihoods, businesses and employment to make the population reliant on the state (the Cult) for even the basics of life through a guaranteed pittance income. While independence of income remained these Cult ambitions would be thwarted. With this knowledge it was easy to see where the 'pandemic' hoax was going once talk of 'lockdowns' began and the closing of all but perceived 'essential' businesses to 'save' us from an alleged 'deadly virus'. Cult corporations like Amazon and Walmart were naturally considered 'essential' while mom and pop shops and stores had their doors closed by fascist decree. As a result with every new lockdown and new regulation more small and medium, even large businesses not owned by the Cult, went to the wall while Cult giants and their frontmen and women grew financially fatter by the second. Mom and pop were

denied an income and the right to earn a living and the wealth of people like Jeff Bezos (Amazon), Mark Zuckerberg (Facebook) and Sergei Brin and Larry Page (Google/Alphabet) have reached record levels. The Cult was increasing its own power through further dramatic concentrations of wealth while the competition was being destroyed and brought into a state of dependency. Lockdowns have been instigated to secure that very end and were never anything to do with health. My brother Paul spent 45 years building up a bus repair business, but lockdowns meant buses were running at a fraction of normal levels for months on end. Similar stories can be told in their hundreds of millions worldwide. Efforts of a lifetime coldly destroyed by Cult multi-billionaires and their lackeys in government and law enforcement who continued to earn their living from the taxation of the people while denying the right of the same people to earn theirs. How different it would have been if those making and enforcing these decisions had to face the same financial hardships of those they affected, but they never do.

Gates of Hell

Behind it all in the full knowledge of what he is doing and why is the psychopathic figure of Cult operative Bill Gates. His puppet Tedros at the World Health Organization declared 'Covid' a pandemic in March, 2020. The WHO had changed the definition of a 'pandemic' in 2009 just a month before declaring the 'swine flu pandemic' which would not have been so under the previous definition. The same applies to 'Covid'. The definition had included... 'an infection by an infectious agent, occurring simultaneously in different countries, with a significant mortality rate relative to the proportion of the population infected'. The new definition removed the need for 'significant mortality'. The 'pandemic' has been fraudulent even down to the definition, but Gates demanded economy-destroying lockdowns, school closures, social distancing, mandatory masks, a 'vaccination' for every man, woman and child on the planet and severe consequences and restrictions for those that refused. Who gave him this power? The

Cult did which he serves like a little boy in short trousers doing what his daddy tells him. He and his psychopathic missus even smiled when they said that much worse was to come (what they knew was planned to come). Gates responded in the matter-of-fact way of all psychopaths to a question about the effect on the world economy of what he was doing:

Well, it won't go to zero but it will shrink. Global GDP is probably going to take the biggest hit ever [Gates was smiling as he said this] ... in my lifetime this will be the greatest economic hit. But you don't have a choice. People act as if you have a choice. People don't feel like going to the stadium when they might get infected ... People are deeply affected by seeing these stats, by knowing they could be part of the transmission chain, old people, their parents and grandparents, could be affected by this, and so you don't get to say ignore what is going on here.

There will be the ability to open up, particularly in rich countries, if things are done well over the next few months, but for the world at large normalcy only returns when we have largely vaccinated the entire population.

The man has no compassion or empathy. How could he when he's a psychopath like all Cult players? My own view is that even beyond that he is very seriously mentally ill. Look in his eyes and you can see this along with his crazy flailing arms. You don't do what he has done to the world population since the start of 2020 unless you are mentally ill and at the most extreme end of psychopathic. You especially don't do it when to you know, as we shall see, that cases and deaths from 'Covid' are fakery and a product of monumental figure massaging. 'These stats' that Gates referred to are based on a 'test' that's not testing for the 'virus' as he has known all along. He made his fortune with big Cult support as an infamously ruthless software salesman and now buys global control of 'health' (death) policy without the population he affects having any say. It's a breathtaking outrage. Gates talked about people being deeply affected by fear of 'Covid' when that was because of *him* and his global network lying to them minute-by-minute supported by a lying media that he seriously influences and funds to the tune of hundreds of millions. He's handed big sums to media operations including the BBC, NBC, Al Jazeera, Univision, *PBS NewsHour*,

ProPublica, National Journal, The Guardian, The Financial Times, The Atlantic, Texas Tribune, USA Today publisher Gannett, Washington Monthly, Le Monde, Center for Investigative Reporting, Pulitzer Center on Crisis Reporting, National Press Foundation, International Center for Journalists, Solutions Journalism Network, the Poynter Institute for Media Studies, and many more. Gates is everywhere in the 'Covid' hoax and the man must go to prison – or a mental facility – for the rest of his life and his money distributed to those he has taken such enormous psychopathic pleasure in crushing.

The Muscle

The Hunger Games global structure demands a police-military state – a fusion of the two into one force – which viciously imposes the will of the Cult on the population and protects the Cult from public rebellion. In that regard, too, the 'Covid' hoax just keeps on giving. Often unlawful, ridiculous and contradictory 'Covid' rules and regulations have been policed across the world by moronic automatons and psychopaths made faceless by face-nappy masks and acting like the Nazi SS and fascist blackshirts and brownshirts of Hitler and Mussolini. The smallest departure from the rules decreed by the psychos in government and their clueless gofers were jumped upon by the face-nappy fascists. Brutality against public protestors soon became commonplace even on girls, women and old people as the brave men with the batons – the Face-Nappies as I call them – broke up peaceful protests and handed out fines like confetti to people who couldn't earn a living let alone pay hundreds of pounds for what was once an accepted human right. Robot Face-Nappies of Nottingham police in the English East Midlands fined one group £11,000 for attending a child's birthday party. For decades I charted the transformation of law enforcement as genuine, decent officers were replaced with psychopaths and the brain dead who would happily and brutally do whatever their masters told them. Now they were let loose on the public and I would emphasise the point that none of this just happened. The step-by-step change in the dynamic between police and public was orchestrated from the shadows by

those who knew where this was all going and the same with the perceptual reframing of those in all levels of authority and official administration through 'training courses' by organisations such as Common Purpose which was created in the late 1980s and given a massive boost in Blair era Britain until it became a global phenomenon. Supposed public 'servants' began to view the population as the enemy and the same was true of the police. This was the start of the explosion of behaviour manipulation organisations and networks preparing for the all-war on the human psyche unleashed with the dawn of 2020. I will go into more detail about this later in the book because it is a core part of what is happening.

Police desecrated beauty spots to deter people gathering and arrested women for walking in the countryside alone 'too far' from their homes. We had arrogant, clueless sergeants in the Isle of Wight police where I live posting on Facebook what they insisted the population must do or else. A schoolmaster sergeant called Radford looked young enough for me to ask if his mother knew he was out, but he was posting what he *expected* people to do while a Sergeant Wilkinson boasted about fining lads for meeting in a McDonald's car park where they went to get a lockdown takeaway. Wilkinson added that he had even cancelled their order. What a pair of prats these people are and yet they have increasingly become the norm among Jackboot Johnson's Yellowshirts once known as the British police. This was the theme all over the world with police savagery common during lockdown protests in the United States, the Netherlands, and the fascist state of Victoria in Australia under its tyrannical and again moronic premier Daniel Andrews. Amazing how tyrannical and moronic tend to work as a team and the same combination could be seen across America as arrogant, narcissistic Woke governors and mayors such as Gavin Newsom (California), Andrew Cuomo (New York), Gretchen Whitmer (Michigan), Lori Lightfoot (Chicago) and Eric Garcetti (Los Angeles) did their Nazi and Stalin impressions with the full support of the compliant brutality of their enforcers in uniform as they arrested small business owners defying

fascist shutdown orders and took them to jail in ankle shackles and handcuffs. This happened to bistro owner Marlena Pavlos-Hackney in Gretchen Whitmer's fascist state of Michigan when police arrived to enforce an order by a state-owned judge for 'putting the community at risk' at a time when other states like Texas were dropping restrictions and migrants were pouring across the southern border without any 'Covid' questions at all. I'm sure there are many officers appalled by what they are ordered to do, but not nearly enough of them. If they were truly appalled they would not do it. As the months passed every opportunity was taken to have the military involved to make their presence on the streets ever more familiar and 'normal' for the longer-term goal of police-military fusion.

Another crucial element to the Hunger Games enforcement network has been encouraging the public to report neighbours and others for 'breaking the lockdown rules'. The group faced with £11,000 in fines at the child's birthday party would have been dobbed-in by a neighbour with a brain the size of a pea. The technique was most famously employed by the Stasi secret police in communist East Germany who had public informants placed throughout the population. A police chief in the UK says his force doesn't need to carry out 'Covid' patrols when they are flooded with so many calls from the public reporting other people for visiting the beach. Dorset police chief James Vaughan said people were so enthusiastic about snitching on their fellow humans they were now operating as an auxiliary arm of the police: 'We are still getting around 400 reports a week from the public, so we will respond to reports ... We won't need to be doing hotspot patrols because people are very quick to pick the phone up and tell us.' Vaughan didn't say that this is a pillar of all tyrannies of whatever complexion and the means to hugely extend the reach of enforcement while spreading distrust among the people and making them wary of doing anything that might get them reported. Those narcissistic Isle of Wight sergeants Radford and Wilkinson never fail to add a link to their Facebook posts where the public can inform on their fellow slaves.

Neither would be self-aware enough to realise they were imitating the Stasi which they might well never have heard of. Government psychologists that I will expose later laid out a policy to turn communities against each other in the same way.

A coincidence? Yep, and I can knit fog

I knew from the start of the alleged pandemic that this was a Cult operation. It presented limitless potential to rapidly advance the Cult agenda and exploit manipulated fear to demand that every man, woman and child on the planet was 'vaccinated' in a process never used on humans before which infuses self-replicating *synthetic* material into human cells. Remember the plan to transform the human body from a biological to a synthetic biological state. I'll deal with the 'vaccine' (that's not actually a vaccine) when I focus on the genetic agenda. Enough to say here that mass global 'vaccination' justified by this 'new virus' set alarms ringing after 30 years of tracking these people and their methods. The 'Covid' hoax officially beginning in China was also a big red flag for reasons I will be explaining. The agenda potential was so enormous that I could dismiss any idea that the 'virus' appeared naturally. Major happenings with major agenda implications never occur without Cult involvement in making them happen. My questions were twofold in early 2020 as the media began its campaign to induce global fear and hysteria: Was this alleged infectious agent released on purpose by the Cult or did it even exist at all? I then did what I always do in these situations. I sat, observed and waited to see where the evidence and information would take me. By March and early April synchronicity was strongly – and ever more so since then – pointing me in the direction of *there is no 'virus'*. I went public on that with derision even from swathes of the alternative media that voiced a scenario that the Chinese government released the 'virus' in league with Deep State elements in the United States from a top-level bio-lab in Wuhan where the 'virus' is said to have first appeared. I looked at that possibility, but I didn't buy it for several reasons. Deaths from the 'virus' did not in any way match what they

would have been with a 'deadly bioweapon' and it is much more effective if you sell the *illusion* of an infectious agent rather than having a real one unless you can control through injection who has it and who doesn't. Otherwise you lose control of events. A made-up 'virus' gives you a blank sheet of paper on which you can make it do whatever you like and have any symptoms or mutant 'variants' you choose to add while a real infectious agent would limit you to what it actually does. A phantom disease allows you to have endless ludicrous 'studies' on the 'Covid' dollar to widen the perceived impact by inventing ever more 'at risk' groups including one study which said those who walk slowly may be almost four times more likely to die from the 'virus'. People are in psychiatric wards for less.

A real 'deadly bioweapon' can take out people in the hierarchy that are not part of the Cult, but essential to its operation. Obviously they don't want that. Releasing a real disease means you immediately lose control of it. Releasing an illusory one means you don't. Again it's vital that people are extra careful when dealing with what they want to hear. A bioweapon unleashed from a Chinese laboratory in collusion with the American Deep State may fit a conspiracy narrative, but is it true? Would it not be far more effective to use the excuse of a 'virus' to justify the real bioweapon – the 'vaccine'? That way your disease agent does not have to be transmitted and arrives directly through a syringe. I saw a French virologist Luc Montagnier quoted in the alternative media as saying he had discovered that the alleged 'new' severe acute respiratory syndrome coronavirus , or SARS-CoV-2, was made artificially and included elements of the human immunodeficiency 'virus' (HIV) and a parasite that causes malaria. SARS-CoV-2 is alleged to trigger an alleged illness called Covid-19. I remembered Montagnier's name from my research years before into claims that an HIV 'retrovirus' causes AIDs – claims that were demolished by Berkeley virologist Peter Duesberg who showed that no one had ever proved that HIV causes acquired immunodeficiency syndrome or AIDS. Claims that become accepted as fact, publicly and medically, with no proof whatsoever are an ever-recurring story that profoundly applies to

‘Covid’. Nevertheless, despite the lack of proof, Montagnier’s team at the Pasteur Institute in Paris had a long dispute with American researcher Robert Gallo over which of them discovered and isolated the HIV ‘virus’ and with *no evidence* found it to cause AIDS. You will see later that there is also no evidence that any ‘virus’ causes any disease or that there is even such a thing as a ‘virus’ in the way it is said to exist. The claim to have ‘isolated’ the HIV ‘virus’ will be presented in its real context as we come to the shocking story – and it is a story – of SARS-CoV-2 and so will Montagnier’s assertion that he identified the full SARS-CoV-2 genome.

Hoax in the making

We can pick up the ‘Covid’ story in 2010 and the publication by the Rockefeller Foundation of a document called ‘Scenarios for the Future of Technology and International Development’. The inner circle of the Rockefeller family has been serving the Cult since John D. Rockefeller (1839-1937) made his fortune with Standard Oil. It is less well known that the same Rockefeller – the Bill Gates of his day – was responsible for establishing what is now referred to as ‘Big Pharma’, the global network of pharmaceutical companies that make outrageous profits dispensing scalpel and drug ‘medicine’ and are obsessed with pumping vaccines in ever-increasing number into as many human arms and backsides as possible. John D. Rockefeller was the driving force behind the creation of the ‘education’ system in the United States and elsewhere specifically designed to program the perceptions of generations thereafter. The Rockefeller family donated exceptionally valuable land in New York for the United Nations building and were central in establishing the World Health Organization in 1948 as an agency of the UN which was created from the start as a Trojan horse and stalking horse for world government. Now enter Bill Gates. His family and the Rockefellers have long been extremely close and I have seen genealogy which claims that if you go back far enough the two families fuse into the same bloodline. Gates has said that the Bill and Melinda Gates Foundation was inspired by the Rockefeller Foundation and why not

when both are serving the same Cult? Major tax-exempt foundations are overwhelmingly criminal enterprises in which Cult assets fund the Cult agenda in the guise of 'philanthropy' while avoiding tax in the process. Cult operatives can become mega-rich in their role of front men and women for the psychopaths at the inner core and they, too, have to be psychopaths to knowingly serve such evil. Part of the deal is that a big percentage of the wealth gleaned from representing the Cult has to be spent advancing the ambitions of the Cult and hence you have the Rockefeller Foundation, Bill and Melinda Gates Foundation (and *so* many more) and people like George Soros with his global Open Society Foundations spending their billions in pursuit of global Cult control. Gates is a global public face of the Cult with his interventions in world affairs including Big Tech influence; a central role in the 'Covid' and 'vaccine' scam; promotion of the climate change shakedown; manipulation of education; geoengineering of the skies; and his food-control agenda as the biggest owner of farmland in America, his GMO promotion and through other means. As one writer said: 'Gates monopolizes or wields disproportionate influence over the tech industry, global health and vaccines, agriculture and food policy (including biopiracy and fake food), weather modification and other climate technologies, surveillance, education and media.' The almost limitless wealth secured through Microsoft and other not-allowed-to-fail ventures (including vaccines) has been ploughed into a long, long list of Cult projects designed to enslave the entire human race. Gates and the Rockefellers have been working as one unit with the Rockefeller-established World Health Organization leading global 'Covid' policy controlled by Gates through his mouth-piece Tedros. Gates became the WHO's biggest funder when Trump announced that the American government would cease its donations, but Biden immediately said he would restore the money when he took office in January, 2021. The Gates Foundation (the Cult) owns through limitless funding the world health system and the major players across the globe in the 'Covid' hoax.

Okay, with that background we return to that Rockefeller Foundation document of 2010 headed 'Scenarios for the Future of Technology and International Development' and its 'imaginary' epidemic of a virulent and deadly influenza strain which infected 20 percent of the global population and killed eight million in seven months. The Rockefeller scenario was that the epidemic destroyed economies, closed shops, offices and other businesses and led to governments imposing fierce rules and restrictions that included mandatory wearing of face masks and body-temperature checks to enter communal spaces like railway stations and supermarkets. The document predicted that even after the height of the Rockefeller-envisaged epidemic the authoritarian rule would continue to deal with further pandemics, transnational terrorism, environmental crises and rising poverty. Now you may think that the Rockefellers are our modern-day seers or alternatively, and rather more likely, that they well knew what was planned a few years further on. Fascism had to be imposed, you see, to 'protect citizens from risk and exposure'. The Rockefeller scenario document said:

During the pandemic, national leaders around the world flexed their authority and imposed airtight rules and restrictions, from the mandatory wearing of face masks to body-temperature checks at the entries to communal spaces like train stations and supermarkets. Even after the pandemic faded, this more authoritarian control and oversight of citizens and their activities stuck and even intensified. In order to protect themselves from the spread of increasingly global problems – from pandemics and transnational terrorism to environmental crises and rising poverty – leaders around the world took a firmer grip on power.

At first, the notion of a more controlled world gained wide acceptance and approval. Citizens willingly gave up some of their sovereignty – and their privacy – to more paternalistic states in exchange for greater safety and stability. Citizens were more tolerant, and even eager, for top-down direction and oversight, and national leaders had more latitude to impose order in the ways they saw fit.

In developed countries, this heightened oversight took many forms: biometric IDs for all citizens, for example, and tighter regulation of key industries whose stability was deemed vital to national interests. In many developed countries, enforced cooperation with a suite of new regulations and agreements slowly but steadily restored both order and, importantly, economic growth.

There we have the prophetic Rockefellers in 2010 and three years later came their paper for the Global Health Summit in Beijing, China, when government representatives, the private sector, international organisations and groups met to discuss the next 100 years of 'global health'. The Rockefeller Foundation-funded paper was called 'Dreaming the Future of Health for the Next 100 Years and more prophecy ensued as it described a dystopian future: 'The abundance of data, digitally tracking and linking people may mean the 'death of privacy' and may replace physical interaction with transient, virtual connection, generating isolation and raising questions of how values are shaped in virtual networks.' Next in the 'Covid' hoax preparation sequence came a 'table top' simulation in 2018 for another 'imaginary' pandemic of a disease called Clade X which was said to kill 900 million people. The exercise was organised by the Gates-funded Johns Hopkins University's Center for Health Security in the United States and this is the very same university that has been compiling the disgustingly and systematically erroneous global figures for 'Covid' cases and deaths. Similar Johns Hopkins health crisis scenarios have included the Dark Winter exercise in 2001 and Atlantic Storm in 2005.

Nostradamus 201

For sheer predictive genius look no further prophecy-watchers than the Bill Gates-funded Event 201 held only six weeks before the 'coronavirus pandemic' is supposed to have broken out in China and Event 201 was based on a scenario of a global 'coronavirus pandemic'. Melinda Gates, the great man's missus, told the BBC that he had 'prepared for years' for a coronavirus pandemic which told us what we already knew. Nostradamugates had predicted in a TED talk in 2015 that a pandemic was coming that would kill a lot of people and demolish the world economy. My god, the man is a machine – possibly even literally. Now here he was only weeks before the real thing funding just such a simulated scenario and involving his friends and associates at Johns Hopkins, the World Economic Forum Cult-front of Klaus Schwab, the United Nations,

Johnson & Johnson, major banks, and officials from China and the Centers for Disease Control in the United States. What synchronicity – Johns Hopkins would go on to compile the fraudulent ‘Covid’ figures, the World Economic Forum and Schwab would push the ‘Great Reset’ in response to ‘Covid’, the Centers for Disease Control would be at the forefront of ‘Covid’ policy in the United States, Johnson & Johnson would produce a ‘Covid vaccine’, and everything would officially start just weeks later in China. Spooky, eh? They were even accurate in creating a simulation of a ‘virus’ pandemic because the ‘real thing’ would also be a simulation. Event 201 was not an exercise preparing for something that might happen; it was a rehearsal for what those in control knew was *going* to happen and very shortly. Hours of this simulation were posted on the Internet and the various themes and responses mirrored what would soon be imposed to transform human society. News stories were inserted and what they said would be commonplace a few weeks later with still more prophecy perfection. Much discussion focused on the need to deal with misinformation and the ‘anti-vax movement’ which is exactly what happened when the ‘virus’ arrived – was said to have arrived – in the West.

Cult-owned social media banned criticism and exposure of the official ‘virus’ narrative and when I said there *was* no ‘virus’ in early April, 2020, I was banned by one platform after another including YouTube, Facebook and later Twitter. The mainstream broadcast media in Britain was in effect banned from interviewing me by the Tony-Blair-created government broadcasting censor Ofcom headed by career government bureaucrat Melanie Dawes who was appointed just as the ‘virus’ hoax was about to play out in January, 2020. At the same time the Ickonic media platform was using Vimeo, another ultra-Zionist-owned operation, while our own player was being created and they deleted in an instant hundreds of videos, documentaries, series and shows to confirm their unbelievable vindictiveness. We had copies, of course, and they had to be restored one by one when our player was ready. These people have no class. Sabbatian Facebook promised free advertisements for the Gates-

controlled World Health Organization narrative while deleting ‘false claims and conspiracy theories’ to stop ‘misinformation’ about the alleged coronavirus. All these responses could be seen just a short while earlier in the scenarios of Event 201. Extreme censorship was absolutely crucial for the Cult because the official story was so ridiculous and unsupportable by the evidence that it could never survive open debate and the free-flow of information and opinion. If you can’t win a debate then don’t have one is the Cult’s approach throughout history. Facebook’s little boy front man – front boy – Mark Zuckerberg equated ‘credible and accurate information’ with official sources and exposing their lies with ‘misinformation’.

Silencing those that can see

The censorship dynamic of Event 201 is now the norm with an army of narrative-supporting ‘fact-checker’ organisations whose entire reason for being is to tell the public that official narratives are true and those exposing them are lying. One of the most appalling of these ‘fact-checkers’ is called NewsGuard founded by ultra-Zionist Americans Gordon Crovitz and Steven Brill. Crovitz is a former publisher of *The Wall Street Journal*, former Executive Vice President of Dow Jones, a member of the Council on Foreign Relations (CFR), and on the board of the American Association of Rhodes Scholars. The CFR and Rhodes Scholarships, named after Rothschild agent Cecil Rhodes who plundered the gold and diamonds of South Africa for his masters and the Cult, have featured widely in my books. NewsGuard don’t seem to like me for some reason – I really can’t think why – and they have done all they can to have me censored and discredited which is, to quote an old British politician, like being savaged by a dead sheep. They are, however, like all in the censorship network, very well connected and funded by organisations themselves funded by, or connected to, Bill Gates. As you would expect with anything associated with Gates NewsGuard has an offshoot called HealthGuard which ‘fights online health care hoaxes’. How very kind. Somehow the NewsGuard European Managing Director Anna-Sophie Harling, a remarkably young-

looking woman with no broadcasting experience and little hands-on work in journalism, has somehow secured a position on the 'Content Board' of UK government broadcast censor Ofcom. An executive of an organisation seeking to discredit dissidents of the official narratives is making decisions for the government broadcast 'regulator' about content?? Another appalling 'fact-checker' is Full Fact funded by George Soros and global censors Google and Facebook.

It's amazing how many activists in the 'fact-checking', 'anti-hate', arena turn up in government-related positions – people like UK Labour Party activist Imran Ahmed who heads the Center for Countering Digital Hate founded by people like Morgan McSweeney, now chief of staff to the Labour Party's hapless and useless 'leader' Keir Starmer. Digital Hate – which is what it really is – uses the American spelling of Center to betray its connection to a transatlantic network of similar organisations which in 2020 shapeshifted from attacking people for 'hate' to attacking them for questioning the 'Covid' hoax and the dangers of the 'Covid vaccine'. It's just a coincidence, you understand. This is one of Imran Ahmed's hysterical statements: 'I would go beyond calling anti-vaxxers conspiracy theorists to say they are an extremist group that pose a national security risk.' No one could ever accuse this prat of understatement and he's including in that those parents who are now against vaccines after their children were damaged for life or killed by them. He's such a nice man. Ahmed does the rounds of the Woke media getting soft-ball questions from spineless 'journalists' who never ask what right he has to campaign to destroy the freedom of speech of others while he demands it for himself. There also seems to be an overrepresentation in Ofcom of people connected to the narrative-worshipping BBC. This incredible global network of narrative-support was super-vital when the 'Covid' hoax was played in the light of the mega-whopper lies that have to be defended from the spotlight cast by the most basic intelligence.

Setting the scene

The Cult plays the long game and proceeds step-by-step ensuring that everything is in place before major cards are played and they don't come any bigger than the 'Covid' hoax. The psychopaths can't handle events where the outcome isn't certain and as little as possible – preferably nothing – is left to chance. Politicians, government and medical officials who would follow direction were brought to illusory power in advance by the Cult web whether on the national stage or others like state governors and mayors of America. For decades the dynamic between officialdom, law enforcement and the public was changed from one of service to one of control and dictatorship. Behaviour manipulation networks established within government were waiting to impose the coming 'Covid' rules and regulations specifically designed to subdue and rewire the psyche of the people in the guise of protecting health. These included in the UK the Behavioural Insights Team part-owned by the British government Cabinet Office; the Scientific Pandemic Insights Group on Behaviours (SPI-B); and a whole web of intelligence and military groups seeking to direct the conversation on social media and control the narrative. Among them are the cyberwarfare (on the people) 77th Brigade of the British military which is also coordinated through the Cabinet Office as civilian and military leadership continues to combine in what they call the Fusion Doctrine. The 77th Brigade is a British equivalent of the infamous Israeli (Sabbatian) military cyberwarfare and Internet manipulation operation Unit 8200 which I expose at length in *The Trigger*. Also carefully in place were the medical and science advisers to government – many on the payroll past or present of Bill Gates – and a whole alternative structure of unelected government stood by to take control when elected parliaments were effectively closed down once the 'Covid' card was slammed on the table. The structure I have described here and so much more was installed in every major country through the Cult networks. The top-down control hierarchy looks like this: The Cult – Cult-owned Gates – the World Health Organization and Tedros – Gates-funded or controlled chief medical officers and science 'advisers' (dictators) in each country –

political 'leaders' – law enforcement – The People. Through this simple global communication and enforcement structure the policy of the Cult could be imposed on virtually the entire human population so long as they acquiesced to the fascism. With everything in place it was time for the button to be pressed in late 2019/early 2020.

These were the prime goals the Cult had to secure for its will to prevail:

1) Locking down economies, closing all but designated 'essential' businesses (Cult-owned corporations were 'essential'), and putting the population under house arrest was an imperative to destroy independent income and employment and ensure dependency on the Cult-controlled state in the Hunger Games Society. Lockdowns had to be established as the global blueprint from the start to respond to the 'virus' and followed by pretty much the entire world.

2) The global population had to be terrified into believing in a deadly 'virus' that didn't actually exist so they would unquestioningly obey authority in the belief that authority must know how best to protect them and their families. Software salesman Gates would suddenly morph into the world's health expert and be promoted as such by the Cult-owned media.

3) A method of testing that wasn't testing for the 'virus', but was only claimed to be, had to be in place to provide the illusion of 'cases' and subsequent 'deaths' that had a very different cause to the 'Covid-19' that would be scribbled on the death certificate.

4) Because there was no 'virus' and the great majority testing positive with a test not testing for the 'virus' would have no symptoms of anything the lie had to be sold that people without symptoms (without the 'virus') could still pass it on to others. This was crucial to justify for the first time quarantining – house arresting – healthy people. Without this the economy-destroying lockdown of *everybody* could not have been credibly sold.

5) The 'saviour' had to be seen as a vaccine which beyond evil drug companies were working like angels of mercy to develop as quickly as possible, with all corners cut, to save the day. The public must absolutely not know that the 'vaccine' had nothing to do with a 'virus' or that the contents were ready and waiting with a very different motive long before the 'Covid' card was even lifted from the pack.

I said in March, 2020, that the 'vaccine' would have been created way ahead of the 'Covid' hoax which justified its use and the following December an article in the New York *Intelligencer* magazine said the Moderna 'vaccine' had been 'designed' by

January, 2020. This was 'before China had even acknowledged that the disease could be transmitted from human to human, more than a week before the first confirmed coronavirus case in the United States'. The article said that by the time the first American death was announced a month later 'the vaccine had already been manufactured and shipped to the National Institutes of Health for the beginning of its Phase I clinical trial'. The 'vaccine' was actually 'designed' long before that although even with this timescale you would expect the article to ask how on earth it could have been done that quickly. Instead it asked why the 'vaccine' had not been rolled out then and not months later. Journalism in the mainstream is truly dead. I am going to detail in the next chapter why the 'virus' has never existed and how a hoax on that scale was possible, but first the foundation on which the Big Lie of 'Covid' was built.

The test that doesn't test

Fraudulent 'testing' is the bottom line of the whole 'Covid' hoax and was the means by which a 'virus' that did not exist *appeared* to exist. They could only achieve this magic trick by using a test not testing for the 'virus'. To use a test that *was* testing for the 'virus' would mean that every test would come back negative given there was no 'virus'. They chose to exploit something called the RT-PCR test invented by American biochemist Kary Mullis in the 1980s who said publicly that his PCR test ... *cannot detect infectious disease*. Yes, the 'test' used worldwide to detect infectious 'Covid' to produce all the illusory 'cases' and 'deaths' compiled by Johns Hopkins and others *cannot detect infectious disease*. This fact came from the mouth of the man who invented PCR and was awarded the Nobel Prize in Chemistry in 1993 for doing so. Sadly, and incredibly conveniently for the Cult, Mullis died in August, 2019, at the age of 74 just before his test would be fraudulently used to unleash fascism on the world. He was said to have died from pneumonia which was an irony in itself. A few months later he would have had 'Covid-19' on his death certificate. I say the timing of his death was convenient because had he lived Mullis, a brilliant, honest and decent man, would have been

vociferously speaking out against the use of his test to detect 'Covid' when it was never designed, or able, to do that. I know that to be true given that Mullis made the same point when his test was used to 'detect' – not detect – HIV. He had been seriously critical of the Gallo/Montagnier claim to have isolated the HIV 'virus' and shown it to cause AIDS for which Mullis said there was no evidence. AIDS is actually not a disease but a series of diseases from which people die all the time. When they die from those *same diseases* after a positive 'test' for HIV then AIDS goes on their death certificate. I think I've heard that before somewhere. Countries instigated a policy with 'Covid' that anyone who tested positive with a test not testing for the 'virus' and died of any other cause within 28 days and even longer 'Covid-19' had to go on the death certificate. Cases have come from the test that can't test for infectious disease and the deaths are those who have died of *anything* after testing positive with a test not testing for the 'virus'. I'll have much more later about the death certificate scandal.

Mullis was deeply dismissive of the now US 'Covid' star Anthony Fauci who he said was a liar who didn't know anything about anything – 'and I would say that to his face – nothing.' He said of Fauci: 'The man thinks he can take a blood sample, put it in an electron microscope and if it's got a virus in there you'll know it – he doesn't understand electron microscopy and he doesn't understand medicine and shouldn't be in a position like he's in.' That position, terrifyingly, has made him the decider of 'Covid' fascism policy on behalf of the Cult in his role as director since 1984 of the National Institute of Allergy and Infectious Diseases (NIAID) while his record of being wrong is laughable; but being wrong, so long as it's the *right kind* of wrong, is why the Cult loves him. He'll say anything the Cult tells him to say. Fauci was made Chief Medical Adviser to the President immediately Biden took office. Biden was installed in the White House by Cult manipulation and one of his first decisions was to elevate Fauci to a position of even more control. This is a coincidence? Yes, and I identify as a flamenco dancer called Lola. How does such an incompetent criminal like Fauci remain in that

pivotal position in American health since *the 1980s*? When you serve the Cult it looks after you until you are surplus to requirements. Kary Mullis said prophetically of Fauci and his like: 'Those guys have an agenda and it's not an agenda we would like them to have ... they make their own rules, they change them when they want to, and Tony Fauci does not mind going on television in front of the people who pay his salary and lie directly into the camera.' Fauci has done that almost daily since the 'Covid' hoax began. Lying is in Fauci's DNA. To make the situation crystal clear about the PCR test this is a direct quote from its inventor Kary Mullis:

It [the PCR test] doesn't tell you that you're sick and doesn't tell you that the thing you ended up with was really going to hurt you ...'

Ask yourself why governments and medical systems the world over have been using this very test to decide who is 'infected' with the SARS-CoV-2 'virus' and the alleged disease it allegedly causes, 'Covid-19'. The answer to that question will tell you what has been going on. By the way, here's a little show-stopper – the 'new' SARS-CoV-2 'virus' was 'identified' as such right from the start using ... *the PCR test not testing for the 'virus'*. If you are new to this and find that shocking then stick around. I have hardly started yet. Even worse, other 'tests', like the 'Lateral Flow Device' (LFD), are considered so useless that they have to be *confirmed* by the PCR test! Leaked emails written by Ben Dyson, adviser to UK 'Health' Secretary Matt Hancock, said they were 'dangerously unreliable'. Dyson, executive director of strategy at the Department of Health, wrote: 'As of today, someone who gets a positive LFD result in (say) London has at best a 25 per cent chance of it being a true positive, but if it is a self-reported test potentially as low as 10 per cent (on an optimistic assumption about specificity) or as low as 2 per cent (on a more pessimistic assumption).' These are the 'tests' that schoolchildren and the public are being urged to have twice a week or more and have to isolate if they get a positive. Each fake positive goes in the statistics as a 'case' no matter how ludicrously inaccurate and the

'cases' drive lockdown, masks and the pressure to 'vaccinate'. The government said in response to the email leak that the 'tests' were accurate which confirmed yet again what shocking bloody liars they are. The real false positive rate is *100 percent* as we'll see. In another 'you couldn't make it up' the UK government agreed to pay £2.8 billion to California's Innova Medical Group to supply the irrelevant lateral flow tests. The company's primary test-making centre is in China. Innova Medical Group, established in March, 2020, is owned by Pasaca Capital Inc, chaired by Chinese-American millionaire Charles Huang who was born in Wuhan.

How it works – and how it doesn't

The RT-PCR test, known by its full title of Polymerase chain reaction, is used across the world to make millions, even billions, of copies of a DNA/RNA genetic information sample. The process is called 'amplification' and means that a tiny sample of genetic material is amplified to bring out the detailed content. I stress that it is not testing for an infectious disease. It is simply amplifying a sample of genetic material. In the words of Kary Mullis: 'PCR is ... just a process that's used to make a whole lot of something out of something.' To emphasise the point companies that make the PCR tests circulated around the world to 'test' for 'Covid' warn on the box that it can't be used to detect 'Covid' or infectious disease and is for research purposes only. It's okay, rest for a minute and you'll be fine. This is the test that produces the 'cases' and 'deaths' that have been used to destroy human society. All those global and national medical and scientific 'experts' demanding this destruction to 'save us' *KNOW* that the test is not testing for the 'virus' and the cases and deaths they claim to be real are an almost unimaginable fraud. Every one of them and so many others including politicians and psychopaths like Gates and Tedros must be brought before Nuremburg-type trials and jailed for the rest of their lives. The more the genetic sample is amplified by PCR the more elements of that material become sensitive to the test and by that I don't mean sensitive for a 'virus' but for elements of the genetic material which

is *naturally* in the body or relates to remnants of old conditions of various kinds lying dormant and causing no disease. Once the amplification of the PCR reaches a certain level *everyone* will test positive. So much of the material has been made sensitive to the test that everyone will have some part of it in their body. Even lying criminals like Fauci have said that once PCR amplifications pass 35 cycles everything will be a false positive that cannot be trusted for the reasons I have described. I say, like many proper doctors and scientists, that 100 percent of the 'positives' are false, but let's just go with Fauci for a moment.

He says that any amplification over 35 cycles will produce false positives and yet the US Centers for Disease Control (CDC) and Food and Drug Administration (FDA) have recommended up to 40 *cycles* and the National Health Service (NHS) in Britain admitted in an internal document for staff that it was using 45 *cycles* of amplification. A long list of other countries has been doing the same and at least one 'testing' laboratory has been using 50 *cycles*. Have you ever heard a doctor, medical 'expert' or the media ask what level of amplification has been used to claim a 'positive'. The 'test' comes back 'positive' and so you have the 'virus', end of story. Now we can see how the government in Tanzania could send off samples from a goat and a pawpaw fruit under human names and both came back positive for 'Covid-19'. Tanzania president John Magufuli mocked the 'Covid' hysteria, the PCR test and masks and refused to import the DNA-manipulating 'vaccine'. The Cult hated him and an article sponsored by the Bill Gates Foundation appeared in the London *Guardian* in February, 2021, headed 'It's time for Africa to rein in Tanzania's anti-vaxxer president'. Well, 'reined in' he shortly was. Magufuli appeared in good health, but then, in March, 2021, he was dead at 61 from 'heart failure'. He was replaced by Samia Hassan Suhulu who is connected to Klaus Schwab's World Economic Forum and she immediately reversed Magufuli's 'Covid' policy. A sample of cola tested positive for 'Covid' with the PCR test in Germany while American actress and singer-songwriter Erykah Badu tested positive in one nostril and negative in the other. Footballer Ronaldo called

the PCR test 'bullshit' after testing positive three times and being forced to quarantine and miss matches when there was nothing wrong with him. The mantra from Tedros at the World Health Organization and national governments (same thing) has been test, test, test. They know that the more tests they can generate the more fake 'cases' they have which go on to become 'deaths' in ways I am coming to. The UK government has its Operation Moonshot planned to test multiple millions every day in workplaces and schools with free tests for everyone to use twice a week at home in line with the Cult plan from the start to make testing part of life. A government advertisement for an 'Interim Head of Asymptomatic Testing Communication' said the job included responsibility for delivering a 'communications strategy' (propaganda) 'to support the expansion of asymptomatic testing that *'normalises testing as part of everyday life'*'. More tests means more fake 'cases', 'deaths' and fascism. I have heard of, and from, many people who booked a test, couldn't turn up, and yet got a positive result through the post for a test they'd never even had. The whole thing is crazy, but for the Cult there's method in the madness. Controlling and manipulating the level of amplification of the test means the authorities can control whenever they want the number of apparent 'cases' and 'deaths'. If they want to justify more fascist lockdown and destruction of livelihoods they keep the amplification high. If they want to give the illusion that lockdowns and the 'vaccine' are working then they lower the amplification and 'cases' and 'deaths' will appear to fall. In January, 2021, the Cult-owned World Health Organization suddenly warned laboratories about over-amplification of the test and to lower the threshold. Suddenly headlines began appearing such as: 'Why ARE "Covid" cases plummeting?' This was just when the vaccine rollout was underway and I had predicted months before they would make cases appear to fall through amplification tampering when the 'vaccine' came. These people are so predictable.

Cow vaccines?

The question must be asked of what is on the test swabs being poked far up the nose of the population to the base of the brain? A nasal swab punctured one woman's brain and caused it to leak fluid. Most of these procedures are being done by people with little training or medical knowledge. Dr Lorraine Day, former orthopaedic trauma surgeon and Chief of Orthopaedic Surgery at San Francisco General Hospital, says the tests are really a '*vaccine*'. Cows have long been vaccinated this way. She points out that masks have to cover the nose and the mouth where it is claimed the '*virus*' exists in saliva. Why then don't they take saliva from the mouth as they do with a DNA test instead of pushing a long swab up the nose towards the brain? The ethmoid bone separates the nasal cavity from the brain and within that bone is the cribriform plate. Dr Day says that when the swab is pushed up against this plate and twisted the procedure is '*depositing things back there*'. She claims that among these '*things*' are nanoparticles that can enter the brain. Researchers have noted that a team at the Gates-funded Johns Hopkins have designed tiny, star-shaped micro-devices that can latch onto intestinal mucosa and release drugs into the body. Mucosa is the thin skin that covers the inside surface of parts of the body such as *the nose* and mouth and produces mucus to protect them. The Johns Hopkins micro-devices are called '*theragrippers*' and were '*inspired*' by a parasitic worm that digs its sharp teeth into a host's intestines. Nasal swabs are also coated in the sterilisation agent ethylene oxide. The US National Cancer Institute posts this explanation on its website:

At room temperature, ethylene oxide is a flammable colorless gas with a sweet odor. It is used primarily to produce other chemicals, including antifreeze. In smaller amounts, ethylene oxide is used as a pesticide and a sterilizing agent. The ability of ethylene oxide to damage DNA makes it an effective sterilizing agent but also accounts for its cancer-causing activity.

The Institute mentions lymphoma and leukaemia as cancers most frequently reported to be associated with occupational exposure to ethylene oxide along with stomach and breast cancers. How does anyone think this is going to work out with the constant testing

regime being inflicted on adults and children at home and at school that will accumulate in the body anything that's on the swab?

Doctors know best

It is vital for people to realise that 'hero' doctors 'know' only what the Big Pharma-dominated medical authorities tell them to 'know' and if they refuse to 'know' what they are told to 'know' they are out the door. They are mostly not physicians or healers, but repeaters of the official narrative – or else. I have seen alleged professional doctors on British television make shocking statements that we are supposed to take seriously. One called 'Dr' Amir Khan, who is actually telling patients how to respond to illness, said that men could take the birth pill to 'help slow down the effects of Covid-19'. In March, 2021, another ridiculous 'Covid study' by an American doctor proposed injecting men with the female sex hormone progesterone as a 'Covid' treatment. British doctor Nighat Arif told the BBC that face coverings were now going to be part of ongoing normal. Yes, the vaccine protects you, she said (evidence?) ... but the way to deal with viruses in the community was always going to come down to hand washing, face covering and keeping a physical distance. That's not what we were told before the 'vaccine' was circulating. Arif said she couldn't imagine ever again going on the underground or in a lift without a mask. I was just thanking my good luck that she was not my doctor when she said – in March, 2021 – that if 'we are *behaving* and we are doing all the right things' she thought we could 'have our nearest and dearest around us at home ... around *Christmas* and *New Year*! Her patronising delivery was the usual school teacher talking to six-year-olds as she repeated every government talking point and probably believed them all. If we have learned anything from the 'Covid' experience surely it must be that humanity's perception of doctors needs a fundamental rethink. NHS 'doctor' Sara Kayat told her television audience that the 'Covid vaccine' would '100 percent prevent hospitalisation and death'. Not even Big Pharma claimed that. We have to stop taking 'experts' at their word without question when so many of them are

clueless and only repeating the party line on which their careers depend. That is not to say there are not brilliant doctors – there are and I have spoken to many of them since all this began – but you won't see them in the mainstream media or quoted by the psychopaths and yes-people in government.

Remember the name – Christian Drosten

German virologist Christian Drosten, Director of Charité Institute of Virology in Berlin, became a national star after the pandemic hoax began. He was feted on television and advised the German government on 'Covid' policy. Most importantly to the wider world Drosten led a group that produced the 'Covid' testing protocol for the PCR test. What a remarkable feat given the PCR cannot test for infectious disease and even more so when you think that Drosten said that his method of testing for SARS-CoV-2 was developed 'without having virus material available'. *He developed a test for a 'virus' that he didn't have and had never seen.* Let that sink in as you survey the global devastation that came from what he did. The whole catastrophe of Drosten's 'test' was based on the alleged genetic sequence published by Chinese scientists on the Internet. We will see in the next chapter that this alleged 'genetic sequence' has never been produced by China or anyone and cannot be when there *is no* SARS-CoV-2. Drosten, however, doesn't seem to let little details like that get in the way. He was the lead author with Victor Corman from the same Charité Hospital of the paper 'Detection of 2019 novel coronavirus (2019-nCoV) by real-time PCR' published in a magazine called *Eurosurveillance*. This became known as the Corman-Drosten paper. In November, 2020, with human society devastated by the effects of the Corman-Drosten test baloney, the protocol was publicly challenged by 22 international scientists and independent researchers from Europe, the United States, and Japan. Among them were senior molecular geneticists, biochemists, immunologists, and microbiologists. They produced a document headed 'External peer review of the RTPCR test to detect SARS-Cov-2 Reveals 10 Major Flaws At The Molecular and Methodological Level: Consequences

For False-Positive Results'. The flaws in the Corman-Drosten test included the following:

- The test is non-specific because of erroneous design
- Results are enormously variable
- The test is unable to discriminate between the whole 'virus' and viral fragments
- It doesn't have positive or negative controls
- The test lacks a standard operating procedure
- It is unsupported by proper peer view

The scientists said the PCR 'Covid' testing protocol was not founded on science and they demanded the Corman-Drosten paper be retracted by *Eurosurveillance*. They said all present and previous Covid deaths, cases, and 'infection rates' should be subject to a massive retroactive inquiry. Lockdowns and travel restrictions should be reviewed and relaxed and those diagnosed through PCR to have 'Covid-19' should not be forced to isolate. Dr Kevin Corbett, a health researcher and nurse educator with a long academic career producing a stream of peer-reviewed publications at many UK universities, made the same point about the PCR test debacle. He said of the scientists' conclusions: 'Every scientific rationale for the development of that test has been totally destroyed by this paper. It's like Hiroshima/Nagasaki to the Covid test.' He said that China hadn't given them an isolated 'virus' when Drosten developed the test. Instead they had developed the test from *a sequence in a gene bank*.' Put another way ... *they made it up!* The scientists were supported in this contention by a Portuguese appeals court which ruled in November, 2020, that PCR tests are unreliable and it is unlawful to quarantine people based solely on a PCR test. The point about China not providing an isolated virus must be true when the 'virus' has never been isolated to this day and the consequences of that will become clear. Drosten and company produced this useless 'protocol' right on cue in January, 2020, just as the 'virus' was said to

be moving westward and it somehow managed to successfully pass a peer-review in 24 hours. In other words there was no peer-review for a test that would be used to decide who had 'Covid' and who didn't across the world. The Cult-created, Gates-controlled World Health Organization immediately recommended all its nearly 200 member countries to use the Drosten PCR protocol to detect 'cases' and 'deaths'. The sting was underway and it continues to this day.

So who is this Christian Drosten that produced the means through which death, destruction and economic catastrophe would be justified? His education background, including his doctoral thesis, would appear to be somewhat shrouded in mystery and his track record is dire as with another essential player in the 'Covid' hoax, the Gates-funded Professor Neil Ferguson at the Gates-funded Imperial College in London of whom more shortly. Drosten predicted in 2003 that the alleged original SARS 'virus' (SARS-1) was an epidemic that could have serious effects on economies and an effective vaccine would take at least two years to produce. Drosten's answer to every alleged 'outbreak' is a vaccine which you won't be shocked to know. What followed were just 774 official deaths worldwide and none in Germany where there were only nine cases. That is even if you believe there ever was a SARS 'virus' when the evidence is zilch and I will expand on this in the next chapter. Drosten claims to be co-discoverer of 'SARS-1' and developed a test for it in 2003. He was screaming warnings about 'swine flu' in 2009 and how it was a widespread infection far more severe than any dangers from a vaccine could be and people should get vaccinated. It would be helpful for Drosten's vocal chords if he simply recorded the words 'the virus is deadly and you need to get vaccinated' and copies could be handed out whenever the latest made-up threat comes along. Drosten's swine flu epidemic never happened, but Big Pharma didn't mind with governments spending hundreds of millions on vaccines that hardly anyone bothered to use and many who did wished they hadn't. A study in 2010 revealed that the risk of dying from swine flu, or H1N1, was no higher than that of the annual seasonal flu which is what at least most of 'it' really was as in

the case of 'Covid-19'. A media investigation into Drosten asked how with such a record of inaccuracy he could be *the* government adviser on these issues. The answer to that question is the same with Drosten, Ferguson and Fauci – they keep on giving the authorities the 'conclusions' and 'advice' they want to hear. Drosten certainly produced the goods for them in January, 2020, with his PCR protocol garbage and provided the foundation of what German internal medicine specialist Dr Claus Köhnlein, co-author of *Virus Mania*, called the 'test pandemic'. The 22 scientists in the *Eurosurveillance* challenge called out conflicts of interest within the Drosten 'protocol' group and with good reason. Olfert Landt, a regular co-author of Drosten 'studies', owns the biotech company TIB Molbiol Syntheselabor GmbH in Berlin which manufactures and sells the tests that Drosten and his mates come up with. They have done this with SARS, Enterotoxigenic E. coli (ETEC), MERS, Zika 'virus', yellow fever, and now 'Covid'. Landt told the *Berliner Zeitung* newspaper:

The testing, design and development came from the Charité [Drosten and Corman]. We simply implemented it immediately in the form of a kit. And if we don't have the virus, which originally only existed in Wuhan, we can make a synthetic gene to simulate the genome of the virus. That's what we did very quickly.

This is more confirmation that the Drosten test was designed without access to the 'virus' and only a synthetic simulation which is what SARS-CoV-2 really is – a computer-generated synthetic fiction. It's quite an enterprise they have going here. A Drosten team decides what the test for something should be and Landt's biotech company flogs it to governments and medical systems across the world. His company must have made an absolute fortune since the 'Covid' hoax began. Dr Reiner Fuellmich, a prominent German consumer protection trial lawyer in Germany and California, is on Drosten's case and that of Tedros at the World Health Organization for crimes against humanity with a class-action lawsuit being prepared in the United States and other legal action in Germany.

Why China?

Scamming the world with a 'virus' that doesn't exist would seem impossible on the face of it, but not if you have control of the relatively few people that make policy decisions and the great majority of the global media. Remember it's not about changing 'real' reality it's about controlling *perception* of reality. You don't have to make something happen you only have to make people *believe* that it's happening. Renegade Minds understand this and are therefore much harder to swindle. 'Covid-19' is not a 'real' 'virus'. It's a mind virus, like a computer virus, which has infected the minds, not the bodies, of billions. It all started, publically at least, in China and that alone is of central significance. The Cult was behind the revolution led by its asset Mao Zedong, or Chairman Mao, which established the People's Republic of China on October 1st, 1949. It should have been called The Cult's Republic of China, but the name had to reflect the recurring illusion that vicious dictatorships are run by and for the people (see all the 'Democratic Republics' controlled by tyrants). In the same way we have the 'Biden' Democratic Republic of America officially ruled by a puppet tyrant (at least temporarily) on behalf of Cult tyrants. The creation of Mao's merciless communist/fascist dictatorship was part of a frenzy of activity by the Cult at the conclusion of World War Two which, like the First World War, it had instigated through its assets in Germany, Britain, France, the United States and elsewhere. Israel was formed in 1948; the Soviet Union expanded its 'Iron Curtain' control, influence and military power with the Warsaw Pact communist alliance in 1955; the United Nations was formed in 1945 as a Cult precursor to world government; and a long list of world bodies would be established including the World Health Organization (1948), World Trade Organization (1948 under another name until 1995), International Monetary Fund (1945) and World Bank (1944). Human society was redrawn and hugely centralised in the global Problem-Reaction-Solution that was World War Two. All these changes were significant. Israel would become the headquarters of the Sabbatians

and the revolution in China would prepare the ground and control system for the events of 2019/2020.

Renegade Minds know there are no borders except for public consumption. The Cult is a seamless, borderless global entity and to understand the game we need to put aside labels like borders, nations, countries, communism, fascism and democracy. These delude the population into believing that countries are ruled within their borders by a government of whatever shade when these are mere agencies of a global power. America's illusion of democracy and China's communism/fascism are subsidiaries – vehicles – for the same agenda. We may hear about conflict and competition between America and China and on the lower levels that will be true; but at the Cult level they are branches of the same company in the way of the McDonald's example I gave earlier. I have tracked in the books over the years support by US governments of both parties for Chinese Communist Party infiltration of American society through allowing the sale of land, even military facilities, and the acquisition of American business and university influence. All this is underpinned by the infamous stealing of intellectual property and technological know-how. Cult-owned Silicon Valley corporations waive their fraudulent 'morality' to do business with human-rights-free China; Cult-controlled Disney has become China's PR department; and China in effect owns 'American' sports such as basketball which depends for much of its income on Chinese audiences. As a result any sports player, coach or official speaking out against China's horrific human rights record is immediately condemned or fired by the China-worshipping National Basketball Association. One of the first acts of China-controlled Biden was to issue an executive order telling federal agencies to stop making references to the 'virus' by the 'geographic location of its origin'. Long-time Congressman Jerry Nadler warned that criticising China, America's biggest rival, leads to hate crimes against Asian people in the United States. So shut up you bigot. China is fast closing in on Israel as a country that must not be criticised which is apt, really, given that Sabbatians control them both. The two countries have

developed close economic, military, technological and strategic ties which include involvement in China's 'Silk Road' transport and economic initiative to connect China with Europe. Israel was the first country in the Middle East to recognise the establishment of Mao's tyranny in 1950 months after it was established.

Project Wuhan – the 'Covid' Psyop

I emphasise again that the Cult plays the long game and what is happening to the world today is the result of centuries of calculated manipulation following a script to take control step-by-step of every aspect of human society. I will discuss later the common force behind all this that has spanned those centuries and thousands of years if the truth be told. Instigating the Mao revolution in China in 1949 with a 2020 'pandemic' in mind is not only how they work – the 71 years between them is really quite short by the Cult's standards of manipulation preparation. The reason for the Cult's Chinese revolution was to create a fiercely-controlled environment within which an extreme structure for human control could be incubated to eventually be unleashed across the world. We have seen this happen since the 'pandemic' emerged from China with the Chinese control-structure founded on AI technology and tyrannical enforcement sweep across the West. Until the moment when the Cult went for broke in the West and put its fascism on public display Western governments had to pay some lip-service to freedom and democracy to not alert too many people to the tyranny-in-the-making. Freedoms were more subtly eroded and power centralised with covert government structures put in place waiting for the arrival of 2020 when that smokescreen of 'freedom' could be dispensed with. The West was not able to move towards tyranny before 2020 anything like as fast as China which was created as a tyranny and had no limits on how fast it could construct the Cult's blueprint for global control. When the time came to impose that structure on the world it was the same Cult-owned Chinese communist/fascist government that provided the excuse – the 'Covid pandemic'. It was absolutely crucial to the Cult plan for the Chinese response to the 'pandemic' –

draconian lockdowns of the entire population – to become the blueprint that Western countries would follow to destroy the livelihoods and freedom of their people. This is why the Cult-owned, Gates-owned, WHO Director-General Tedros said early on:

The Chinese government is to be congratulated for the extraordinary measures it has taken to contain the outbreak. China is actually setting a new standard for outbreak response and it is not an exaggeration.

Forbes magazine said of China: ‘... those measures protected untold millions from getting the disease’. The Rockefeller Foundation ‘epidemic scenario’ document in 2010 said ‘prophetically’:

However, a few countries did fare better – China in particular. The Chinese government’s quick imposition and enforcement of mandatory quarantine for all citizens, as well as its instant and near-hermetic sealing off of all borders, saved millions of lives, stopping the spread of the virus far earlier than in other countries and enabling a swifter post-pandemic recovery.

Once again – *spooky*.

The first official story was the ‘bat theory’ or rather the bat diversion. The source of the ‘virus outbreak’ we were told was a ‘wet market’ in Wuhan where bats and other animals are bought and eaten in horrifically unhygienic conditions. Then another story emerged through the alternative media that the ‘virus’ had been released on purpose or by accident from a BSL-4 (biosafety level 4) laboratory in Wuhan not far from the wet market. The lab was reported to create and work with lethal concoctions and bioweapons. Biosafety level 4 is the highest in the World Health Organization system of safety and containment. Renegade Minds are aware of what I call designer manipulation. The ideal for the Cult is for people to buy its prime narrative which in the opening salvos of the ‘pandemic’ was the wet market story. It knows, however, that there is now a considerable worldwide alternative media of researchers sceptical of anything governments say and they are often given a version of events in a form they can perceive as credible while misdirecting them from the real truth. In this case let them

think that the conspiracy involved is a 'bioweapon virus' released from the Wuhan lab to keep them from the real conspiracy – *there is no 'virus'*. The WHO's current position on the source of the outbreak at the time of writing appears to be: 'We haven't got a clue, mate.' This is a good position to maintain mystery and bewilderment. The inner circle will know where the 'virus' came from – *nowhere*. The bottom line was to ensure the public believed there *was* a 'virus' and it didn't much matter if they thought it was natural or had been released from a lab. The belief that there was a 'deadly virus' was all that was needed to trigger global panic and fear. The population was terrified into handing their power to authority and doing what they were told. They had to or they were 'all gonna die'.

In March, 2020, information began to come my way from real doctors and scientists and my own additional research which had my intuition screaming: 'Yes, that's it! *There is no virus.*' The 'bioweapon' was not the 'virus'; it was the '*vaccine*' already being talked about that would be the bioweapon. My conclusion was further enhanced by happenings in Wuhan. The 'virus' was said to be sweeping the city and news footage circulated of people collapsing in the street (which they've never done in the West with the same 'virus'). The Chinese government was building 'new hospitals' in a matter of ten days to 'cope with demand' such was the virulent nature of the 'virus'. Yet in what seemed like no time the 'new hospitals' closed – even if they even opened – and China declared itself 'virus-free'. It was back to business as usual. This was more propaganda to promote the Chinese draconian lockdowns in the West as the way to 'beat the virus'. Trouble was that we subsequently had lockdown after lockdown, but never business as usual. As the people of the West and most of the rest of the world were caught in an ever-worsening spiral of lockdown, social distancing, masks, isolated old people, families forced apart, and livelihood destruction, it was party-time in Wuhan. Pictures emerged of thousands of people enjoying pool parties and concerts. It made no sense until you realised there never was a 'virus' and the

whole thing was a Cult set-up to transform human society out of one of its major global strongholds – China.

How is it possible to deceive virtually the entire world population into believing there is a deadly virus when there is not even a 'virus' let alone a deadly one? It's nothing like as difficult as you would think and that's clearly true because it happened.

Postscript: See end of book Postscript for more on the 'Wuhan lab virus release' story which the authorities and media were pushing heavily in the summer of 2021 to divert attention from the truth that the 'Covid virus' is pure invention.

CHAPTER FIVE

There is no 'virus'

You can fool some of the people all of the time, and all of the people some of the time, but you cannot fool all of the people all of the time
Abraham Lincoln

The greatest form of mind control is repetition. The more you repeat the same mantra of alleged 'facts' the more will accept them to be true. It becomes an 'everyone knows that, mate'. If you can also censor any other version or alternative to your alleged 'facts' you are pretty much home and cooking.

By the start of 2020 the Cult owned the global mainstream media almost in its entirety to spew out its 'Covid' propaganda and ignore or discredit any other information and view. Cult-owned social media platforms in Cult-owned Silicon Valley were poised and ready to unleash a campaign of ferocious censorship to obliterate all but the official narrative. To complete the circle many demands for censorship by Silicon Valley were led by the mainstream media as 'journalists' became full-out enforcers for the Cult both as propagandists and censors. Part of this has been the influx of young people straight out of university who have become 'journalists' in significant positions. They have no experience and a headful of programmed perceptions from their years at school and university at a time when today's young are the most perceptually-targeted generations in known human history given the insidious impact of technology. They enter the media perceptually prepared and ready to repeat the narratives of the system that programmed them to

repeat its narratives. The BBC has a truly pathetic 'specialist disinformation reporter' called Marianna Spring who fits this bill perfectly. She is clueless about the world, how it works and what is really going on. Her role is to discredit anyone doing the job that a proper journalist would do and system-serving hacks like Spring wouldn't dare to do or even see the need to do. They are too busy licking the arse of authority which can never be wrong and, in the case of the BBC propaganda programme, *Panorama*, contacting payments systems such as PayPal to have a donations page taken down for a film company making documentaries questioning vaccines. Even the BBC soap opera *EastEnders* included a disgracefully biased scene in which an inarticulate white working class woman was made to look foolish for questioning the 'vaccine' while a well-spoken black man and Asian woman promoted the government narrative. It ticked every BBC box and the fact that the black and minority community was resisting the 'vaccine' had nothing to do with the way the scene was written. The BBC has become a disgusting tyrannical propaganda and censorship operation that should be defunded and disbanded and a free media take its place with a brief to stop censorship instead of demanding it. A BBC 'interview' with Gates goes something like: 'Mr Gates, sir, if I can call you sir, would you like to tell our audience why you are such a great man, a wonderful humanitarian philanthropist, and why you should absolutely be allowed as a software salesman to decide health policy for approaching eight billion people? Thank you, sir, please sir.' Propaganda programming has been incessant and merciless and when all you hear is the same story from the media, repeated by those around you who have only heard the same story, is it any wonder that people on a grand scale believe absolute mendacious garbage to be true? You are about to see, too, why this level of information control is necessary when the official 'Covid' narrative is so nonsensical and unsupportable by the evidence.

Structure of Deceit

The pyramid structure through which the 'Covid' hoax has been manifested is very simple and has to be to work. As few people as possible have to be involved with full knowledge of what they are doing – and why – or the real story would get out. At the top of the pyramid are the inner core of the Cult which controls Bill Gates who, in turn, controls the World Health Organization through his pivotal funding and his puppet Director-General mouthpiece, Tedros. Before he was appointed Tedros was chair of the Gates-founded Global Fund to 'fight against AIDS, tuberculosis and malaria', a board member of the Gates-funded 'vaccine alliance' GAVI, and on the board of another Gates-funded organisation. Gates owns him and picked him for a specific reason – Tedros is a crook and worse. 'Dr' Tedros (he's not a medical doctor, the first WHO chief not to be) was a member of the tyrannical Marxist government of Ethiopia for decades with all its human rights abuses. He has faced allegations of corruption and misappropriation of funds and was exposed three times for covering up cholera epidemics while Ethiopia's health minister. Tedros appointed the mass-murdering genocidal Zimbabwe dictator Robert Mugabe as a WHO goodwill ambassador for public health which, as with Tedros, is like appointing a psychopath to run a peace and love campaign. The move was so ridiculous that he had to drop Mugabe in the face of widespread condemnation. American economist David Steinman, a Nobel peace prize nominee, lodged a complaint with the International Criminal Court in The Hague over alleged genocide by Tedros when he was Ethiopia's foreign minister. Steinman says Tedros was a 'crucial decision maker' who directed the actions of Ethiopia's security forces from 2013 to 2015 and one of three officials in charge when those security services embarked on the 'killing' and 'torturing' of Ethiopians. You can see where Tedros is coming from and it's sobering to think that he has been the vehicle for Gates and the Cult to direct the global response to 'Covid'. Think about that. A psychopathic Cult dictates to psychopath Gates who dictates to psychopath Tedros who dictates how countries of the world must respond to a 'Covid virus' never scientifically shown to exist. At the same time psychopathic Cult-owned Silicon Valley information

giants like Google, YouTube, Facebook and Twitter announced very early on that they would give the Cult/Gates/Tedros/WHO version of the narrative free advertising and censor those who challenged their intelligence-insulting, mendacious story.

The next layer in the global 'medical' structure below the Cult, Gates and Tedros are the chief medical officers and science 'advisers' in each of the WHO member countries which means virtually all of them. Medical officers and arbiters of science (they're not) then take the WHO policy and recommended responses and impose them on their country's population while the political 'leaders' say they are deciding policy (they're clearly not) by 'following the science' on the advice of the 'experts' – the same medical officers and science 'advisers' (dictators). In this way with the rarest of exceptions the entire world followed the same policy of lockdown, people distancing, masks and 'vaccines' dictated by the psychopathic Cult, psychopathic Gates and psychopathic Tedros who we are supposed to believe give a damn about the health of the world population they are seeking to enslave. That, amazingly, is all there is to it in terms of crucial decision-making. Medical staff in each country then follow like sheep the dictates of the shepherds at the top of the national medical hierarchies – chief medical officers and science 'advisers' who themselves follow like sheep the shepherds of the World Health Organization and the Cult. Shepherds at the national level often have major funding and other connections to Gates and his Bill and Melinda Gates Foundation which carefully hands out money like confetti at a wedding to control the entire global medical system from the WHO down.

Follow the money

Christopher Whitty, Chief Medical Adviser to the UK Government at the centre of 'virus' policy, a senior adviser to the government's Scientific Advisory Group for Emergencies (SAGE), and Executive Board member of the World Health Organization, was gifted a grant of \$40 million by the Bill and Melinda Gates Foundation for malaria research in Africa. The BBC described the unelected Whitty as 'the

official who will probably have the greatest impact on our everyday lives of any individual policymaker in modern times' and so it turned out. What Gates and Tedros have said Whitty has done like his equivalents around the world. Patrick Vallance, co-chair of SAGE and the government's Chief Scientific Adviser, is a former executive of Big Pharma giant GlaxoSmithKline with its fundamental financial and business connections to Bill Gates. In September, 2020, it was revealed that Vallance owned a deferred bonus of shares in GlaxoSmithKline worth £600,000 while the company was 'developing' a 'Covid vaccine'. Move along now – nothing to see here – what could possibly be wrong with that? Imperial College in London, a major player in 'Covid' policy in Britain and elsewhere with its 'Covid-19' Response Team, is funded by Gates and has big connections to China while the now infamous Professor Neil Ferguson, the useless 'computer modeller' at Imperial College is also funded by Gates. Ferguson delivered the dramatically inaccurate excuse for the first lockdowns (much more in the next chapter). The Institute for Health Metrics and Evaluation (IHME) in the United States, another source of outrageously false 'Covid' computer models to justify lockdowns, is bankrolled by Gates who is a vehement promotor of lockdowns. America's version of Whitty and Vallance, the again now infamous Anthony Fauci, has connections to 'Covid vaccine' maker Moderna as does Bill Gates through funding from the Bill and Melinda Gates Foundation. Fauci is director of the National Institute of Allergy and Infectious Diseases (NIAID), a major recipient of Gates money, and they are very close. Deborah Birx who was appointed White House Coronavirus Response Coordinator in February, 2020, is yet another with ties to Gates. Everywhere you look at the different elements around the world behind the coordination and decision making of the 'Covid' hoax there is Bill Gates and his money. They include the World Health Organization; Centers for Disease Control (CDC) in the United States; National Institutes of Health (NIH) of Anthony Fauci; Imperial College and Neil Ferguson; the London School of Hygiene where Chris Whitty worked; Regulatory agencies like the UK Medicines & Healthcare products Regulatory Agency (MHRA)

which gave emergency approval for 'Covid vaccines'; Wellcome Trust; GAVI, the Vaccine Alliance; the Coalition for Epidemic Preparedness Innovations (CEPI); Johns Hopkins University which has compiled the false 'Covid' figures; and the World Economic Forum. A [Nationalfile.com](https://www.nationalfile.com) article said:

Gates has a lot of pull in the medical world, he has a multi-million dollar relationship with Dr. Fauci, and Fauci originally took the Gates line supporting vaccines and casting doubt on [the drug hydroxychloroquine]. Coronavirus response team member Dr. Deborah Birx, appointed by former president Obama to serve as United States Global AIDS Coordinator, also sits on the board of a group that has received billions from Gates' foundation, and Birx reportedly used a disputed Bill Gates-funded model for the White House's Coronavirus effort. Gates is a big proponent for a population lockdown scenario for the Coronavirus outbreak.

Another funder of Moderna is the Defense Advanced Research Projects Agency (DARPA), the technology-development arm of the Pentagon and one of the most sinister organisations on earth. DARPA had a major role with the CIA covert technology-funding operation In-Q-Tel in the development of Google and social media which is now at the centre of global censorship. Fauci and Gates are extremely close and openly admit to talking regularly about 'Covid' policy, but then why wouldn't Gates have a seat at every national 'Covid' table after his Foundation committed \$1.75 billion to the 'fight against Covid-19'. When passed through our Orwellian Translation Unit this means that he has bought and paid for the Cult-driven 'Covid' response worldwide. Research the major 'Covid' response personnel in your own country and you will find the same Gates funding and other connections again and again. Medical and science chiefs following World Health Organization 'policy' sit atop a medical hierarchy in their country of administrators, doctors and nursing staff. These 'subordinates' are told they must work and behave in accordance with the policy delivered from the 'top' of the national 'health' pyramid which is largely the policy delivered by the WHO which is the policy delivered by Gates and the Cult. The whole 'Covid' narrative has been imposed on medical staff by a climate of fear although great numbers don't even need that to comply. They do so through breathtaking levels of ignorance and

include doctors who go through life simply repeating what Big Pharma and their hierarchical masters tell them to say and believe. No wonder Big Pharma 'medicine' is one of the biggest killers on Planet Earth.

The same top-down system of intimidation operates with regard to the Cult Big Pharma cartel which also dictates policy through national and global medical systems in this way. The Cult and Big Pharma agendas are the same because the former controls and owns the latter. 'Health' administrators, doctors, and nursing staff are told to support and parrot the dictated policy or they will face consequences which can include being fired. How sad it's been to see medical staff meekly repeating and imposing Cult policy without question and most of those who can see through the deceit are only willing to speak anonymously off the record. They know what will happen if their identity is known. This has left the courageous few to expose the lies about the 'virus', face masks, overwhelmed hospitals that aren't, and the dangers of the 'vaccine' that isn't a vaccine. When these medical professionals and scientists, some renowned in their field, have taken to the Internet to expose the truth their articles, comments and videos have been deleted by Cult-owned Facebook, Twitter and YouTube. What a real head-shaker to see YouTube videos with leading world scientists and highly qualified medical specialists with an added link underneath to the notorious Cult propaganda website *Wikipedia* to find the 'facts' about the same subject.

HIV – the 'Covid' trial-run

I'll give you an example of the consequences for health and truth that come from censorship and unquestioning belief in official narratives. The story was told by PCR inventor Kary Mullis in his book *Dancing Naked in the Mind Field*. He said that in 1984 he accepted as just another scientific fact that Luc Montagnier of France's Pasteur Institute and Robert Gallo of America's National Institutes of Health had independently discovered that a 'retrovirus' dubbed HIV (human immunodeficiency virus) caused AIDS. They

were, after all, Mullis writes, specialists in retroviruses. This is how the medical and science pyramids work. Something is announced or *assumed* and then becomes an everybody-knows-that purely through repetition of the assumption as if it is fact. Complete crap becomes accepted truth with no supporting evidence and only repetition of the crap. This is how a 'virus' that doesn't exist became the 'virus' that changed the world. The HIV-AIDS fairy story became a multi-billion pound industry and the media poured out propaganda terrifying the world about the deadly HIV 'virus' that caused the lethal AIDS. By then Mullis was working at a lab in Santa Monica, California, to detect retroviruses with his PCR test in blood donations received by the Red Cross. In doing so he asked a virologist where he could find a reference for HIV being the cause of AIDS. 'You don't need a reference,' the virologist said ... '*Everybody knows it.*' Mullis said he wanted to quote a reference in the report he was doing and he said he felt a little funny about not knowing the source of such an important discovery when everyone else seemed to. The virologist suggested he cite a report by the Centers for Disease Control and Prevention (CDC) on morbidity and mortality. Mullis read the report, but it only said that an organism had been identified and did not say how. The report did not identify the original scientific work. Physicians, however, *assumed* (key recurring theme) that if the CDC was convinced that HIV caused AIDS then proof must exist. Mullis continues:

I did computer searches. Neither Montagnier, Gallo, nor anyone else had published papers describing experiments which led to the conclusion that HIV probably caused AIDS. I read the papers in *Science* for which they had become well known as AIDS doctors, but all they had said there was that they had found evidence of a past infection by something which was probably HIV in some AIDS patients.

They found antibodies. Antibodies to viruses had always been considered evidence of past disease, not present disease. Antibodies signaled that the virus had been defeated. The patient had saved himself. There was no indication in these papers that this virus caused a disease. They didn't show that everybody with the antibodies had the disease. In fact they found some healthy people with antibodies.

Mullis asked why their work had been published if Montagnier and Gallo hadn't really found this evidence, and why had they been fighting so hard to get credit for the discovery? He says he was hesitant to write 'HIV is the probable cause of AIDS' until he found published evidence to support that. 'Tens of thousands of scientists and researchers were spending billions of dollars a year doing research based on this idea,' Mullis writes. 'The reason had to be there somewhere; otherwise these people would not have allowed their research to settle into one narrow channel of investigation.' He said he lectured about PCR at numerous meetings where people were always talking about HIV and he asked them how they knew that HIV was the cause of AIDS:

Everyone said something. Everyone had the answer at home, in the office, in some drawer. They all knew, and they would send me the papers as soon as they got back. But I never got any papers. Nobody ever sent me the news about how AIDS was caused by HIV.

Eventually Mullis was able to ask Montagnier himself about the reference proof when he lectured in San Diego at the grand opening of the University of California AIDS Research Center. Mullis says this was the last time he would ask his question without showing anger. Montagnier said he should reference the CDC report. 'I read it', Mullis said, and it didn't answer the question. 'If Montagnier didn't know the answer who the hell did?' Then one night Mullis was driving when an interview came on National Public Radio with Peter Duesberg, a prominent virologist at Berkeley and a California Scientist of the Year. Mullis says he finally understood why he could not find references that connected HIV to AIDS – *there weren't any!* No one had ever proved that HIV causes AIDS even though it had spawned a multi-billion pound global industry and the media was repeating this as fact every day in their articles and broadcasts terrifying the shit out of people about AIDS and giving the impression that a positive test for HIV (see 'Covid') was a death sentence. Duesberg was a threat to the AIDS gravy train and the agenda that underpinned it. He was therefore abused and castigated after he told the Proceedings of the National Academy of Sciences

there was no good evidence implicating the new 'virus'. Editors rejected his manuscripts and his research funds were deleted. Mullis points out that the CDC has defined AIDS as one of more than 30 diseases *if accompanied* by a positive result on a test that detects antibodies to HIV; but those same diseases are not defined as AIDS cases when antibodies are not detected:

If an HIV-positive woman develops uterine cancer, for example, she is considered to have AIDS. If she is not HIV positive, she simply has uterine cancer. An HIV-positive man with tuberculosis has AIDS; if he tests negative he simply has tuberculosis. If he lives in Kenya or Colombia, where the test for HIV antibodies is too expensive, he is simply presumed to have the antibodies and therefore AIDS, and therefore he can be treated in the World Health Organization's clinic. It's the only medical help available in some places. And it's free, because the countries that support WHO are worried about AIDS.

Mullis accuses the CDC of continually adding new diseases (see ever more 'Covid symptoms') to the grand AIDS definition and of virtually doctoring the books to make it appear as if the disease continued to spread. He cites how in 1993 the CDC enormously broadened its AIDS definition and county health authorities were delighted because they received \$2,500 per year from the Federal government for every reported AIDS case. Ladies and gentlemen, I have just described, via Kary Mullis, the 'Covid pandemic' of 2020 and beyond. Every element is the same and it's been pulled off in the same way by the same networks.

The 'Covid virus' exists? Okay – prove it. Er ... still waiting

What Kary Mullis described with regard to 'HIV' has been repeated with 'Covid'. A claim is made that a new, or 'novel', infection has been found and the entire medical system of the world repeats that as fact exactly as they did with HIV and AIDS. No one in the mainstream asks rather relevant questions such as 'How do you know?' and 'Where is your proof?' The SARS-Cov-2 'virus' and the 'Covid-19 disease' became an overnight 'everybody-knows-that'. The origin could be debated and mulled over, but what you could not suggest was that 'SARS-Cov-2' didn't exist. That would be

ridiculous. 'Everybody knows' the 'virus' exists. Well, I didn't for one along with American proper doctors like Andrew Kaufman and Tom Cowan and long-time American proper journalist Jon Rappaport. We dared to pursue the obvious and simple question: 'Where's the evidence?' The overwhelming majority in medicine, journalism and the general public did not think to ask that. After all, *everyone knew* there was a new 'virus'. Everyone was saying so and I heard it on the BBC. Some would eventually argue that the 'deadly virus' was nothing like as deadly as claimed, but few would venture into the realms of its very existence. Had they done so they would have found that the evidence for that claim had gone AWOL as with HIV causes AIDS. In fact, not even that. For something to go AWOL it has to exist in the first place and scientific proof for a 'SARS-Cov-2' can be filed under nothing, nowhere and zilch.

Dr Andrew Kaufman is a board-certified forensic psychiatrist in New York State, a Doctor of Medicine and former Assistant Professor and Medical Director of Psychiatry at SUNY Upstate Medical University, and Medical Instructor of Hematology and Oncology at the Medical School of South Carolina. He also studied biology at the Massachusetts Institute of Technology (MIT) and trained in Psychiatry at Duke University. Kaufman is retired from allopathic medicine, but remains a consultant and educator on natural healing. I saw a video of his very early on in the 'Covid' hoax in which he questioned claims about the 'virus' in the absence of any supporting evidence and with plenty pointing the other way. I did everything I could to circulate his work which I felt was asking the pivotal questions that needed an answer. I can recommend an excellent pull-together interview he did with the website The Last Vagabond entitled *Dr Andrew Kaufman: Virus Isolation, Terrain Theory and Covid-19* and his website is andrewkaufmanmd.com. Kaufman is not only a forensic psychiatrist; he is forensic in all that he does. He always reads original scientific papers, experiments and studies instead of second-third-fourth-hand reports about the 'virus' in the media which are repeating the repeated repetition of the narrative. When he did so with the original Chinese 'virus' papers Kaufman

realised that there was no evidence of a 'SARS-Cov-2'. They had never – from the start – shown it to exist and every repeat of this claim worldwide was based on the accepted existence of proof that was nowhere to be found – see Kary Mullis and HIV. Here we go again.

Let's postulate

Kaufman discovered that the Chinese authorities immediately concluded that the cause of an illness that broke out among about 200 initial patients in Wuhan was a 'new virus' when there were no grounds to make that conclusion. The alleged 'virus' was not isolated from other genetic material in their samples and then shown through a system known as Koch's postulates to be the causative agent of the illness. The world was told that the SARS-Cov-2 'virus' caused a disease they called 'Covid-19' which had 'flu-like' symptoms and could lead to respiratory problems and pneumonia. If it wasn't so tragic it would almost be funny. *'Flu-like' symptoms? Pneumonia? Respiratory disease?* What in *CHINA* and particularly in *Wuhan*, one of the most polluted cities in the world with a resulting epidemic of respiratory disease?? Three hundred thousand people get pneumonia in China every year and there are nearly a billion cases worldwide of 'flu-like symptoms'. These have a whole range of causes – including pollution in Wuhan – but no other possibility was credibly considered in late 2019 when the world was told there was a new and deadly 'virus'. The global prevalence of pneumonia and 'flu-like systems' gave the Cult networks unlimited potential to re-diagnose these other causes as the mythical 'Covid-19' and that is what they did from the very start. Kaufman revealed how Chinese medical and science authorities (all subordinates to the Cult-owned communist government) took genetic material from the lungs of only a few of the first patients. The material contained their own cells, bacteria, fungi and other microorganisms living in their bodies. The only way you could prove the existence of the 'virus' and its responsibility for the alleged 'Covid-19' was to isolate the virus from all the other material – a process also known as 'purification' – and

then follow the postulates sequence developed in the late 19th century by German physician and bacteriologist Robert Koch which became the 'gold standard' for connecting an alleged causation agent to a disease:

1. The microorganism (bacteria, fungus, virus, etc.) must be present in every case of the disease and all patients must have the same symptoms. It must also *not be present in healthy individuals*.
2. The microorganism must be isolated from the host with the disease. If the microorganism is a bacteria or fungus it must be grown in a pure culture. If it is a virus, it must be purified (i.e. containing no other material except the virus particles) from a clinical sample.
3. The specific disease, with all of its characteristics, must be reproduced when the infectious agent (the purified virus or a pure culture of bacteria or fungi) is inoculated into a healthy, susceptible host.
4. The microorganism must be recoverable from the experimentally infected host as in step 2.

Not one of these criteria has been met in the case of 'SARS-Cov-2' and 'Covid-19'. Not ONE. EVER. Robert Koch refers to bacteria and not viruses. What are called 'viral particles' are so minute (hence masks are useless by any definition) that they could only be seen after the invention of the electron microscope in the 1930s and can still only be observed through that means. American bacteriologist and virologist Thomas Milton Rivers, the so-called 'Father of Modern Virology' who was very significantly director of the Rockefeller Institute for Medical Research in the 1930s, developed a less stringent version of Koch's postulates to identify 'virus' causation known as 'Rivers criteria'. 'Covid' did not pass that process either. Some even doubt whether any 'virus' can be isolated from other particles containing genetic material in the Koch method. Freedom of Information requests in many countries asking for scientific proof that the 'Covid virus' has been purified and isolated and shown to exist have all come back with a 'we don't have that' and when this happened with a request to the UK Department of Health they added this comment:

However, outside of the scope of the [Freedom of Information Act] and on a discretionary basis, the following information has been advised to us, which may be of interest. Most infectious diseases are caused by viruses, bacteria or fungi. Some bacteria or fungi have the capacity to grow on their own in isolation, for example in colonies on a petri dish. Viruses are different in that they are what we call 'obligate pathogens' – that is, they cannot survive or reproduce without infecting a host ...

... For some diseases, it is possible to establish causation between a microorganism and a disease by isolating the pathogen from a patient, growing it in pure culture and reintroducing it to a healthy organism. These are known as 'Koch's postulates' and were developed in 1882. However, as our understanding of disease and different disease-causing agents has advanced, these are no longer the method for determining causation [Andrew Kaufman asks why in that case are there two published articles falsely claiming to satisfy Koch's postulates].

It has long been known that viral diseases cannot be identified in this way as viruses cannot be grown in 'pure culture'. When a patient is tested for a viral illness, this is normally done by looking for the presence of antigens, or viral genetic code in a host with molecular biology techniques [Kaufman asks how you could know the origin of these chemicals without having a pure culture for comparison].

For the record 'antigens' are defined so:

Invading microorganisms have antigens on their surface that the human body can recognise as being foreign – meaning not belonging to it. When the body recognises a foreign antigen, lymphocytes (white blood cells) produce antibodies, which are complementary in shape to the antigen.

Notwithstanding that this is open to question in relation to 'SARS-Cov-2' the presence of 'antibodies' can have many causes and they are found in people that are perfectly well. Kary Mullis said: 'Antibodies ... had always been considered evidence of past disease, not present disease.'

'Covid' really is a *computer* 'virus'

Where the UK Department of Health statement says 'viruses' are now 'diagnosed' through a 'viral genetic code in a host with molecular biology techniques', they mean ... *the PCR test* which its inventor said cannot test for infectious disease. They have no credible method of connecting a 'virus' to a disease and we will see that there is no scientific proof that any 'virus' causes any disease or there is any such thing as a 'virus' in the way that it is described. Tenacious Canadian researcher Christine Massey and her team made

some 40 Freedom of Information requests to national public health agencies in different countries asking for proof that SARS-CoV-2 has been isolated and not one of them could supply that information. Massey said of her request in Canada: 'Freedom of Information reveals Public Health Agency of Canada has no record of 'SARS-COV-2' isolation performed by anyone, anywhere, ever.' If you accept the comment from the UK Department of Health it's because they can't isolate a 'virus'. Even so many 'science' papers claimed to have isolated the 'Covid virus' until they were questioned and had to admit they hadn't. A reply from the Robert Koch Institute in Germany was typical: 'I am not aware of a paper which purified isolated SARS-CoV-2.' So what the hell was Christian Drosten and his gang using to design the 'Covid' testing protocol that has produced all the illusory Covid' cases and 'Covid' deaths when the head of the Chinese version of the CDC admitted there was a problem right from the start in that the 'virus' had never been isolated/purified? Breathe deeply: What they are calling 'Covid' is actually created by a *computer program* i.e. *they made it up* – er, that's it. They took lung fluid, with many sources of genetic material, from one single person alleged to be infected with Covid-19 by a PCR test which they *claimed*, without clear evidence, contained a 'virus'. They used several computer programs to create a model of a theoretical virus genome sequence from more than fifty-six million small sequences of RNA, each of an unknown source, assembling them like a puzzle with no known solution. The computer filled in the gaps with sequences from bits in the gene bank to make it look like a bat SARS-like coronavirus! A wave of the magic wand and poof, an *in silico* (computer-generated) genome, a scientific fantasy, was created. UK health researcher Dr Kevin Corbett made the same point with this analogy:

... It's like giving you a few bones and saying that's your fish. It could be any fish. Not even a skeleton. Here's a few fragments of bones. That's your fish ... It's all from gene bank and the bits of the virus sequence that weren't there they made up.

They synthetically created them to fill in the blanks. That's what genetics is; it's a code. So it's ABBCCDDDD and you're missing some what you think is EEE so you put it in. It's all

synthetic. You just manufacture the bits that are missing. This is the end result of the geneticization of virology. This is basically a computer virus.

Further confirmation came in an email exchange between British citizen journalist Frances Leader and the government's Medicines & Healthcare Products Regulatory Agency (the Gates-funded MHRA) which gave emergency permission for untested 'Covid vaccines' to be used. The agency admitted that the 'vaccine' is not based on an isolated 'virus', but comes from a *computer-generated model*. Frances Leader was naturally banned from Cult-owned fascist Twitter for making this exchange public. The process of creating computer-generated alleged 'viruses' is called 'in silico' or 'in silicon' – computer chips – and the term 'in silico' is believed to originate with biological experiments using only a computer in 1989. 'Vaccines' involved with 'Covid' are also produced 'in silico' or by computer not a natural process. If the original 'virus' is nothing more than a made-up computer model how can there be 'new variants' of something that never existed in the first place? They are not new 'variants'; they are new *computer models* only minutely different to the original program and designed to further terrify the population into having the 'vaccine' and submitting to fascism. You want a 'new variant'? Click, click, enter – there you go. Tell the medical profession that you have discovered a 'South African variant', 'UK variants' or a 'Brazilian variant' and in the usual HIV-causes-AIDS manner they will unquestioningly repeat it with no evidence whatsoever to support these claims. They will go on television and warn about the dangers of 'new variants' while doing nothing more than repeating what they have been told to be true and knowing that any deviation from that would be career suicide. Big-time insiders will know it's a hoax, but much of the medical community is clueless about the way they are being played and themselves play the public without even being aware they are doing so. What an interesting 'coincidence' that AstraZeneca and Oxford University were conducting 'Covid vaccine trials' in the three countries – the UK, South Africa and Brazil – where the first three 'variants' were claimed to have 'broken out'.

Here's your 'virus' – it's a unicorn

Dr Andrew Kaufman presented a brilliant analysis describing how the 'virus' was imagined into fake existence when he dissected an article published by *Nature* and written by 19 authors detailing *alleged* 'sequencing of a complete viral genome' of the 'new SARS-CoV-2 virus'. This computer-modelled *in silico* genome was used as a template for all subsequent genome sequencing experiments that resulted in the so-called variants which he said now number more than 6,000. The fake genome was constructed from more than 56 million individual short strands of RNA. Those little pieces were assembled into longer pieces by finding areas of overlapping sequences. The computer programs created over two million possible combinations from which the authors simply chose the longest one. They then compared this to a 'bat virus' and the computer 'alignment' rearranged the sequence and filled in the gaps! They called this computer-generated abomination the 'complete genome'. Dr Tom Cowan, a fellow medical author and collaborator with Kaufman, said such computer-generation constitutes scientific fraud and he makes this superb analogy:

Here is an equivalency: A group of researchers claim to have found a unicorn because they found a piece of a hoof, a hair from a tail, and a snippet of a horn. They then add that information into a computer and program it to re-create the unicorn, and they then claim this computer re-creation is the real unicorn. Of course, they had never actually seen a unicorn so could not possibly have examined its genetic makeup to compare their samples with the actual unicorn's hair, hooves and horn.

The researchers claim they decided which is the real genome of SARS-CoV-2 by 'consensus', sort of like a vote. Again, different computer programs will come up with different versions of the imaginary 'unicorn', so they come together as a group and decide which is the real imaginary unicorn.

This is how the 'virus' that has transformed the world was brought into fraudulent 'existence'. Extraordinary, yes, but as the Nazis said the bigger the lie the more will believe it. Cowan, however, wasn't finished and he went on to identify what he called the real blockbuster in the paper. He quotes this section from a paper written

by virologists and published by the CDC and then explains what it means:

Therefore, we examined the capacity of SARS-CoV-2 to infect and replicate in several common primate and human cell lines, including human adenocarcinoma cells (A549), human liver cells (HUH 7.0), and human embryonic kidney cells (HEK-293T). In addition to Vero E6 and Vero CCL81 cells. ... Each cell line was inoculated at high multiplicity of infection and examined 24h post-infection.

No CPE was observed in any of the cell lines except in Vero cells, which grew to greater than 10 to the 7th power at 24 h post-infection. In contrast, HUH 7.0 and 293T showed only modest viral replication, and A549 cells were incompatible with SARS CoV-2 infection.

Cowan explains that when virologists attempt to prove infection they have three possible 'hosts' or models on which they can test. The first was humans. Exposure to humans was generally not done for ethical reasons and has never been done with SARS-CoV-2 or any coronavirus. The second possible host was animals. Cowan said that forgetting for a moment that they never actually use purified virus when exposing animals they do use solutions that they *claim* contain the virus. Exposure to animals has been done with SARS-CoV-2 in an experiment involving mice and this is what they found: *None of the wild (normal) mice got sick*. In a group of genetically-modified mice, a statistically insignificant number lost weight and had slightly bristled fur, but they experienced nothing like the illness called 'Covid-19'. Cowan said the third method – the one they mostly rely on – is to inoculate solutions they *say* contain the virus onto a variety of tissue cultures. This process had never been shown to kill tissue *unless* the sample material was starved of nutrients and poisoned as *part of the process*. Yes, incredibly, in tissue experiments designed to show the 'virus' is responsible for killing the tissue they starve the tissue of nutrients and add toxic drugs including antibiotics and they do not have control studies to see if it's the starvation and poisoning that is degrading the tissue rather than the 'virus' they allege to be in there somewhere. You want me to pinch you? Yep, I understand. Tom Cowan said this about the whole nonsensical farce as he explains what that quote from the CDC paper really means:

The shocking thing about the above quote is that using their own methods, the virologists found that solutions containing SARS-CoV-2 – even in high amounts – were NOT, I repeat NOT, infective to any of the three human tissue cultures they tested. In plain English, this means they proved, on their terms, that this ‘new coronavirus’ is not infectious to human beings. It is ONLY infective to monkey kidney cells, and only then when you add two potent drugs (gentamicin and amphotericin), known to be toxic to kidneys, to the mix.

My friends, read this again and again. These virologists, published by the CDC, performed a clear proof, on their terms, showing that the SARS-CoV-2 virus is harmless to human beings. That is the only possible conclusion, but, unfortunately, this result is not even mentioned in their conclusion. They simply say they can provide virus stocks cultured only on monkey Vero cells, thanks for coming.

Cowan concluded: ‘If people really understood how this “science” was done, I would hope they would storm the gates and demand honesty, transparency and truth.’ Dr Michael Yeadon, former Vice President and Chief Scientific Adviser at drug giant Pfizer has been a vocal critic of the ‘Covid vaccine’ and its potential for multiple harm. He said in an interview in April, 2021, that ‘not one [vaccine] has the virus. He was asked why vaccines normally using a ‘dead’ version of a disease to activate the immune system were not used for ‘Covid’ and instead we had the synthetic methods of the ‘mRNA Covid vaccine’. Yeadon said that to do the former ‘you’d have to have some of [the virus] wouldn’t you?’ He added: ‘No-one’s got any – seriously.’ Yeadon said that surely they couldn’t have fooled the whole world for a year without having a virus, ‘but oddly enough ask around – no one’s got it’. He didn’t know why with all the ‘great labs’ around the world that the virus had not been isolated – ‘Maybe they’ve been too busy running bad PCR tests and vaccines that people don’t need.’ What is today called ‘science’ is not ‘science’ at all. Science is no longer what is, but whatever people can be manipulated to *believe* that it is. Real science has been hijacked by the Cult to dispense and produce the ‘expert scientists’ and contentions that suit the agenda of the Cult. How big-time this has happened with the ‘Covid’ hoax which is entirely based on fake science delivered by fake ‘scientists’ and fake ‘doctors’. The human-caused climate change hoax is also entirely based on fake science delivered by fake ‘scientists’ and fake ‘climate experts’. In both cases real

scientists, climate experts and doctors have their views suppressed and deleted by the Cult-owned science establishment, media and Silicon Valley. This is the 'science' that politicians claim to be 'following' and a common denominator of 'Covid' and climate are Cult psychopaths Bill Gates and his mate Klaus Schwab at the Gates-funded World Economic Forum. But, don't worry, it's all just a coincidence and absolutely nothing to worry about. Zzzzzzzzz.

What is a 'virus' REALLY?

Dr Tom Cowan is one of many contesting the very existence of viruses let alone that they cause disease. This is understandable when there is no scientific evidence for a disease-causing 'virus'. German virologist Dr Stefan Lanka won a landmark case in 2017 in the German Supreme Court over his contention that there is no such thing as a measles virus. He had offered a big prize for anyone who could prove there is and Lanka won his case when someone sought to claim the money. There is currently a prize of more than 225,000 euros on offer from an Isolate Truth Fund for anyone who can prove the isolation of SARS-CoV-2 and its genetic substance. Lanka wrote in an article headed 'The Misconception Called Virus' that scientists think a 'virus' is causing tissue to become diseased and degraded when in fact it is the *processes they are using* which do that – not a 'virus'. Lanka has done an important job in making this point clear as Cowan did in his analysis of the CDC paper. Lanka says that all claims about viruses as disease-causing pathogens are wrong and based on 'easily recognisable, understandable and verifiable misinterpretations.' Scientists believed they were working with 'viruses' in their laboratories when they were really working with 'typical particles of specific dying tissues or cells ...' Lanka said that the tissue decaying process claimed to be caused by a 'virus' still happens when no alleged 'virus' is involved. It's the *process* that does the damage and not a 'virus'. The genetic sample is deprived of nutrients, removed from its energy supply through removal from the body and then doused in toxic antibiotics to remove any bacteria. He confirms again that establishment scientists do not (pinch me)

conduct control experiments to see if this is the case and if they did they would see the claims that 'viruses' are doing the damage is nonsense. He adds that during the measles 'virus' court case he commissioned an independent laboratory to perform just such a control experiment and the result was that the tissues and cells died in the exact same way as with alleged 'infected' material. This is supported by a gathering number of scientists, doctors and researchers who reject what is called 'germ theory' or the belief in the body being infected by contagious sources emitted by other people. Researchers Dawn Lester and David Parker take the same stance in their highly-detailed and sourced book *What Really Makes You Ill – Why everything you thought you knew about disease is wrong* which was recommended to me by a number of medical professionals genuinely seeking the truth. Lester and Parker say there is no provable scientific evidence to show that a 'virus' can be transmitted between people or people and animals or animals and people:

The definition also claims that viruses are the cause of many diseases, as if this has been definitively proven. But this is not the case; there is no original scientific evidence that definitively demonstrates that any virus is the cause of any disease. The burden of proof for any theory lies with those who proposed it; but none of the existing documents provides 'proof' that supports the claim that 'viruses' are pathogens.

Dr Tom Cowan employs one of his clever analogies to describe the process by which a 'virus' is named as the culprit for a disease when what is called a 'virus' is only material released by cells detoxing themselves from infiltration by chemical or radiation poisoning. The tidal wave of technologically-generated radiation in the 'smart' modern world plus all the toxic food and drink are causing this to happen more than ever. Deluded 'scientists' misread this as a gathering impact of what they wrongly label 'viruses'.

Paper can infect houses

Cowan said in an article for davidicke.com – with his tongue only mildly in his cheek – that he believed he had made a tremendous

discovery that may revolutionise science. He had discovered that small bits of paper are alive, 'well alive-ish', can 'infect' houses, and then reproduce themselves inside the house. The result was that this explosion of growth in the paper inside the house causes the house to explode, blowing it to smithereens. His evidence for this new theory is that in the past months he had carefully examined many of the houses in his neighbourhood and found almost no scraps of paper on the lawns and surrounds of the house. There was an occasional stray label, but nothing more. Then he would return to these same houses a week or so later and with a few, not all of them, particularly the old and decrepit ones, he found to his shock and surprise they were littered with stray bits of paper. He knew then that the paper had infected these houses, made copies of itself, and blew up the house. A young boy on a bicycle at one of the sites told him he had seen a demolition crew using dynamite to explode the house the previous week, but Cowan dismissed this as the idle thoughts of silly boys because 'I was on to something big'. He was on to how 'scientists' mistake genetic material in the detoxifying process for something they call a 'virus'. Cowan said of his house and paper story:

If this sounds crazy to you, it's because it should. This scenario is obviously nuts. But consider this admittedly embellished, for effect, current viral theory that all scientists, medical doctors and virologists currently believe.

He takes the example of the 'novel SARS-Cov2' virus to prove the point. First they take someone with an undefined illness called 'Covid-19' and don't even attempt to find any virus in their sputum. Never mind the scientists still describe how this 'virus', which they have not located attaches to a cell receptor, injects its genetic material, in 'Covid's' case, RNA, into the cell. The RNA once inserted exploits the cell to reproduce itself and makes 'thousands, nay millions, of copies of itself ... Then it emerges victorious to claim its next victim':

If you were to look in the scientific literature for proof, actual scientific proof, that uniform SARS-CoV2 viruses have been properly isolated from the sputum of a sick person, that actual spike proteins could be seen protruding from the virus (which has not been found), you would find that such evidence doesn't exist.

If you go looking in the published scientific literature for actual pictures, proof, that these spike proteins or any viral proteins are ever attached to any receptor embedded in any cell membrane, you would also find that no such evidence exists. If you were to look for a video or documented evidence of the intact virus injecting its genetic material into the body of the cell, reproducing itself and then emerging victorious by budding off the cell membrane, you would find that no such evidence exists.

The closest thing you would find is electron micrograph pictures of cellular particles, possibly attached to cell debris, both of which to be seen were stained by heavy metals, a process that completely distorts their architecture within the living organism. This is like finding bits of paper stuck to the blown-up bricks, thereby proving the paper emerged by taking pieces of the bricks on its way out.

The Enders baloney

Cowan describes the 'Covid' story as being just as make-believe as his paper story and he charts back this fantasy to a Nobel Prize winner called John Enders (1897-1985), an American biomedical scientist who has been dubbed 'The Father of Modern Vaccines'. Enders is claimed to have 'discovered' the process of the viral culture which 'proved' that a 'virus' caused measles. Cowan explains how Enders did this 'by using the EXACT same procedure that has been followed by every virologist to find and characterize every new virus since 1954'. Enders took throat swabs from children with measles and immersed them in 2ml of milk. Penicillin (100u/ml) and the antibiotic streptomycin (50,g/ml) were added and the whole mix was centrifuged – rotated at high speed to separate large cellular debris from small particles and molecules as with milk and cream, for example. Cowan says that if the aim is to find little particles of genetic material ('viruses') in the snot from children with measles it would seem that the last thing you would do is mix the snot with other material – milk –that also has genetic material. 'How are you ever going to know whether whatever you found came from the snot or the milk?' He points out that streptomycin is a 'nephrotoxic' or poisonous-to-the-kidney drug. You will see the relevance of that

shortly. Cowan says that it gets worse, much worse, when Enders describes the culture medium upon which the virus 'grows': 'The culture medium consisted of bovine amniotic fluid (90%), beef embryo extract (5%), horse serum (5%), antibiotics and phenol red as an indicator of cell metabolism.' Cowan asks incredulously: 'Did he just say that the culture medium also contained fluids and tissues that are themselves rich sources of genetic material?' The genetic cocktail, or 'medium', is inoculated onto tissue and cells from rhesus monkey *kidney* tissue. This is where the importance of streptomycin comes in and currently-used antimicrobials and other drugs that are *poisonous to kidneys* and used in ALL modern viral cultures (e.g. gentamicin, streptomycin, and amphotericin). Cowan asks: 'How are you ever going to know from this witch's brew where any genetic material comes from as we now have five different sources of rich genetic material in our mix?' Remember, he says, that all genetic material, whether from monkey kidney tissues, bovine serum, milk, etc., is made from the exact same components. The same central question returns: 'How are you possibly going to know that it was the virus that killed the kidney tissue and not the toxic antibiotic and starvation rations on which you are growing the tissue?' John Enders answered the question himself – *you can't*:

A second agent was obtained from an uninoculated culture of monkey kidney cells. The cytopathic changes [death of the cells] it induced in the unstained preparations could not be distinguished with confidence from the viruses isolated from measles.

The death of the cells ('cytopathic changes') happened in exactly the same manner, whether they inoculated the kidney tissue with the measles snot or not, Cowan says. 'This is evidence that the destruction of the tissue, the very proof of viral causation of illness, was not caused by anything in the snot because they saw the same destructive effect when the snot was not even used ... the cytopathic, i.e., cell-killing, changes come from the process of the culture itself, not from any virus in any snot, period.' Enders quotes in his 1957 paper a virologist called Ruckle as reporting similar findings 'and in addition has isolated an agent from monkey kidney tissue that is so

far indistinguishable from human measles virus'. In other words, Cowan says, these particles called 'measles viruses' are simply and clearly breakdown products of the starved and poisoned tissue. For measles 'virus' see all 'viruses' including the so-called 'Covid virus'. Enders, the 'Father of Modern Vaccines', also said:

There is a potential risk in employing cultures of primate cells for the production of vaccines composed of attenuated virus, since the presence of other agents possibly latent in primate tissues cannot be definitely excluded by any known method.

Cowan further quotes from a paper published in the journal *Viruses* in May, 2020, while the 'Covid pandemic' was well underway in the media if not in reality. 'EVs' here refers to particles of genetic debris from our own tissues, such as exosomes of which more in a moment: 'The remarkable resemblance between EVs and viruses has caused quite a few problems in the studies focused on the analysis of EVs released during viral infections.' Later the paper adds that to date a reliable method that can actually guarantee a complete separation (of EVs from viruses) DOES NOT EXIST. This was published at a time when a fairy tale 'virus' was claimed in total certainty to be causing a fairy tale 'viral disease' called 'Covid-19' – a fairy tale that was already well on the way to transforming human society in the image that the Cult has worked to achieve for so long. Cowan concludes his article:

To summarize, there is no scientific evidence that pathogenic viruses exist. What we think of as 'viruses' are simply the normal breakdown products of dead and dying tissues and cells. When we are well, we make fewer of these particles; when we are starved, poisoned, suffocated by wearing masks, or afraid, we make more.

There is no engineered virus circulating and making people sick. People in laboratories all over the world are making genetically modified products to make people sick. These are called vaccines. There is no virome, no 'ecosystem' of viruses, viruses are not 8%, 50% or 100 % of our genetic material. These are all simply erroneous ideas based on the misconception called a virus.

What is 'Covid'? Load of bollocks

The background described here by Cowan and Lanka was emphasised in the first video presentation that I saw by Dr Andrew Kaufman when he asked whether the 'Covid virus' was in truth a natural defence mechanism of the body called 'exosomes'. These are released by cells when in states of toxicity – see the same themes returning over and over. They are released ever more profusely as chemical and radiation toxicity increases and think of the potential effect therefore of 5G alone as its destructive frequencies infest the human energetic information field with a gathering pace (5G went online in Wuhan in 2019 as the 'virus' emerged). I'll have more about this later. Exosomes transmit a warning to the rest of the body that 'Houston, we have a problem'. Kaufman presented images of exosomes and compared them with 'Covid' under an electron microscope and the similarity was remarkable. They both attach to the same cell receptors (*claimed* in the case of 'Covid'), contain the same genetic material in the form of RNA or ribonucleic acid, and both are found in 'viral cell cultures' with damaged or dying cells. James Hildreth MD, President and Chief Executive Officer of the Meharry Medical College at Johns Hopkins, said: 'The virus is fully an exosome in every sense of the word.' Kaufman's conclusion was that there is no 'virus': 'This entire pandemic is a completely manufactured crisis ... there is no evidence of anyone dying from [this] illness.' Dr Tom Cowan and Sally Fallon Morell, authors of *The Contagion Myth*, published a statement with Dr Kaufman in February, 2021, explaining why the 'virus' does not exist and you can read it that in full in the Appendix.

'Virus' theory can be traced to the 'cell theory' in 1858 of German physician Rudolf Virchow (1821-1920) who contended that disease originates from a single cell infiltrated by a 'virus'. Dr Stefan Lanka said that findings and insights with respect to the structure, function and central importance of tissues in the creation of life, which were already known in 1858, comprehensively refute the cell theory. Virchow ignored them. We have seen the part later played by John Enders in the 1950s and Lanka notes that infection theories were only established as a global dogma through the policies and

eugenics of the Third Reich in Nazi Germany (creation of the same Sabbatian cult behind the 'Covid' hoax). Lanka said: 'Before 1933, scientists dared to contradict this theory; after 1933, these critical scientists were silenced'. Dr Tom Cowan's view is that ill-health is caused by too much of something, too little of something, or toxification from chemicals and radiation – not contagion. We must also highlight as a major source of the 'virus' theology a man still called the 'Father of Modern Virology' – Thomas Milton Rivers (1888-1962). There is no way given the Cult's long game policy that it was a coincidence for the 'Father of Modern Virology' to be director of the Rockefeller Institute for Medical Research from 1937 to 1956 when he is credited with making the Rockefeller Institute a leader in 'viral research'. Cult Rockefellerers were the force behind the creation of Big Pharma 'medicine', established the World Health Organisation in 1948, and have long and close associations with the Gates family that now runs the WHO during the pandemic hoax through mega-rich Cult gofer and psychopath Bill Gates.

Only a Renegade Mind can see through all this bullshit by asking the questions that need to be answered, not taking 'no' or prevarication for an answer, and certainly not hiding from the truth in fear of speaking it. Renegade Minds have always changed the world for the better and they will change this one no matter how bleak it may currently appear to be.

CHAPTER SIX

Sequence of deceit

If you tell the truth, you don't have to remember anything
Mark Twain

Against the background that I have laid out this far the sequence that took us from an invented 'virus' in Cult-owned China in late 2019 to the fascist transformation of human society can be seen and understood in a whole new context.

We were told that a deadly disease had broken out in Wuhan and the world media began its campaign (coordinated by behavioural psychologists as we shall see) to terrify the population into unquestioning compliance. We were shown images of Chinese people collapsing in the street which never happened in the West with what was supposed to be the same condition. In the earliest days when alleged cases and deaths were few the fear register was hysterical in many areas of the media and this would expand into the common media narrative across the world. The real story was rather different, but we were never told that. The Chinese government, one of the Cult's biggest centres of global operation, said they had discovered a new illness with flu-like and pneumonia-type symptoms in a city with such toxic air that it is overwhelmed with flu-like symptoms, pneumonia and respiratory disease. Chinese scientists said it was a new – 'novel' – coronavirus which they called Sars-Cov-2 and that it caused a disease they labelled 'Covid-19'. There was no evidence for this and the 'virus' has never to this day been isolated, purified and its genetic code established from that. It

was from the beginning a computer-generated fiction. Stories of Chinese whistleblowers saying the number of deaths was being suppressed or that the 'new disease' was related to the Wuhan bio-lab misdirected mainstream and alternative media into cul-de-sacs to obscure the real truth – there was no 'virus'.

Chinese scientists took genetic material from the lung fluid of just a few people and said they had found a 'new' disease when this material had a wide range of content. There was no evidence for a 'virus' for the very reasons explained in the last two chapters. The 'virus' has never been shown to (a) exist and (b) cause any disease. People were diagnosed on symptoms that are so widespread in Wuhan and polluted China and with a PCR test that can't detect infectious disease. On this farce the whole global scam was sold to the rest of the world which would also diagnose respiratory disease as 'Covid-19' from symptoms alone or with a PCR test not testing for a 'virus'. Flu miraculously disappeared *worldwide* in 2020 and into 2021 as it was redesignated 'Covid-19'. It was really the same old flu with its 'flu-like' symptoms attributed to 'flu-like' 'Covid-19'. At the same time with very few exceptions the Chinese response of draconian lockdown and fascism was the chosen weapon to respond across the West as recommended by the Cult-owned Tedros at the Cult-owned World Health Organization run by the Cult-owned Gates. All was going according to plan. Chinese scientists – everything in China is controlled by the Cult-owned government – compared their contaminated RNA lung-fluid material with other RNA sequences and said it appeared to be just under 80 percent identical to the SARS-CoV-1 'virus' claimed to be the cause of the SARS (severe acute respiratory syndrome) 'outbreak' in 2003. They decreed that because of this the 'new virus' had to be related and they called it SARS-CoV-2. There are some serious problems with this assumption and *assumption* was all it was. Most 'factual' science turns out to be assumptions repeated into everyone-knows-that. A match of under 80-percent is meaningless. Dr Kaufman makes the point that there's a 96 percent genetic correlation between humans and chimpanzees, but 'no one would say our genetic material is part

of the chimpanzee family'. Yet the Chinese authorities were claiming that a much lower percentage, less than 80 percent, proved the existence of a new 'coronavirus'. For goodness sake human DNA is 60 percent similar to a *banana*.

You are feeling sleepy

The entire 'Covid' hoax is a global Psyop, a psychological operation to program the human mind into believing and fearing a complete fantasy. A crucial aspect of this was what *appeared* to happen in Italy. It was all very well streaming out daily images of an alleged catastrophe in Wuhan, but to the Western mind it was still on the other side of the world in a very different culture and setting. A reaction of 'this could happen to me and my family' was still nothing like as intense enough for the mind-doctors. The Cult needed a Western example to push people over that edge and it chose Italy, one of its major global locations going back to the Roman Empire. An Italian 'Covid' crisis was manufactured in a particular area called Lombardy which just happens to be notorious for its toxic air and therefore respiratory disease. Wuhan, China, *déjà vu*. An hysterical media told horror stories of Italians dying from 'Covid' in their droves and how Lombardy hospitals were being overrun by a tidal wave of desperately ill people needing treatment after being struck down by the 'deadly virus'. Here was the psychological turning point the Cult had planned. Wow, if this is happening in Italy, the Western mind concluded, this indeed could happen to me and my family. Another point is that Italian authorities responded by following the Chinese blueprint so vehemently recommended by the Cult-owned World Health Organization. They imposed fascistic lockdowns on the whole country viciously policed with the help of surveillance drones sweeping through the streets seeking out anyone who escaped from mass house arrest. Livelihoods were destroyed and psychology unravelled in the way we have witnessed since in all lockdown countries. Crucial to the plan was that Italy responded in this way to set the precedent of suspending freedom and imposing fascism in a 'Western liberal democracy'. I emphasised in an

animated video explanation on davidicke.com posted in the summer of 2020 how important it was to the Cult to expand the Chinese lockdown model across the West. Without this, and the bare-faced lie that non-symptomatic people could still transmit a 'disease' they didn't have, there was no way locking down the whole population, sick and not sick, could be pulled off. At just the right time and with no evidence Cult operatives and gofers claimed that people without symptoms could pass on the 'disease'. In the name of protecting the 'vulnerable' like elderly people, who lockdowns would kill by the tens of thousands, we had for the first time healthy people told to isolate as well as the sick. The great majority of people who tested positive had no symptoms because there was nothing wrong with them. It was just a trick made possible by a test not testing for the 'virus'.

Months after my animated video the Gates-funded Professor Neil Ferguson at the Gates-funded Imperial College confirmed that I was right. He didn't say it in those terms, naturally, but he did say it. Ferguson will enter the story shortly for his outrageously crazy 'computer models' that led to Britain, the United States and many other countries following the Chinese and now Italian methods of response. Put another way, following the Cult script. Ferguson said that SAGE, the UK government's scientific advisory group which has controlled 'Covid' policy from the start, wanted to follow the Chinese lockdown model (while they all continued to work and be paid), but they wondered if they could possibly, in Ferguson's words, 'get away with it in Europe'. 'Get away with it'? Who the hell do these moronic, arrogant people think they are? This appalling man Ferguson said that once Italy went into national lockdown they realised they, too, could mimic China:

It's a communist one-party state, we said. We couldn't get away with it in Europe, we thought ... and then Italy did it. And we realised we could. Behind this garbage from Ferguson is a simple fact: Doing the same as China in every country was the plan from the start and Ferguson's 'models' would play a central role in achieving that. It's just a coincidence, of course, and absolutely nothing to worry your little head about.

Oops, sorry, our mistake

Once the Italian segment of the Psyop had done the job it was designed to do a very different story emerged. Italian authorities revealed that 99 percent of those who had 'died from Covid-19' in Italy had one, two, three, or more 'co-morbidities' or illnesses and health problems that could have ended their life. The US Centers for Disease Control and Prevention (CDC) published a figure of 94 percent for Americans dying of 'Covid' while having other serious medical conditions – on average two to three (some five or six) other potential causes of death. In terms of death from an unproven 'virus' I say it is 100 percent. The other one percent in Italy and six percent in the US would presumably have died from 'Covid's' flu-like symptoms with a range of other possible causes in conjunction with a test not testing for the 'virus'. Fox News reported that even more startling figures had emerged in one US county in which 410 of 422 deaths attributed to 'Covid-19' had other potentially deadly health conditions. The Italian National Health Institute said later that the average age of people dying with a 'Covid-19' diagnosis in Italy was about 81. Ninety percent were over 70 with ten percent over 90. In terms of other reasons to die some 80 percent had two or more chronic diseases with half having three or more including cardiovascular problems, diabetes, respiratory problems and cancer. Why is the phantom 'Covid-19' said to kill overwhelmingly old people and hardly affect the young? Old people continually die of many causes and especially respiratory disease which you can re-diagnose 'Covid-19' while young people die in tiny numbers by comparison and rarely of respiratory disease. Old people 'die of Covid' because they die of other things that can be redesignated 'Covid' and it really is that simple.

Flu has flown

The blueprint was in place. Get your illusory 'cases' from a test not testing for the 'virus' and redesignate other causes of death as 'Covid-19'. You have an instant 'pandemic' from something that is nothing more than a computer-generated fiction. With near-on a

billion people having 'flu-like' symptoms every year the potential was limitless and we can see why flu quickly and apparently miraculously disappeared *worldwide* by being diagnosed 'Covid-19'. The painfully bloody obvious was explained away by the childlike media in headlines like this in the UK '*Independent*': 'Not a single case of flu detected by Public Health England this year as Covid restrictions suppress virus'. I kid you not. The masking, social distancing and house arrest that did not make the 'Covid virus' disappear somehow did so with the 'flu virus'. Even worse the article, by a bloke called Samuel Lovett, suggested that maybe the masking, sanitising and other 'Covid' measures should continue to keep the flu away. With a ridiculousness that disturbs your breathing (it's 'Covid-19') the said Lovett wrote: 'With widespread social distancing and mask-wearing measures in place throughout the UK, the usual routes of transmission for influenza have been blocked.' He had absolutely no evidence to support that statement, but look at the consequences of him acknowledging the obvious. With flu not disappearing at all and only being relabelled 'Covid-19' he would have to contemplate that 'Covid' was a hoax on a scale that is hard to imagine. You need guts and commitment to truth to even go there and that's clearly something Samuel Lovett does not have in abundance. He would never have got it through the editors anyway.

Tens of thousands die in the United States alone every winter from flu including many with pneumonia complications. CDC figures record *45 million* Americans diagnosed with flu in 2017-2018 of which 61,000 died and some reports claim 80,000. Where was the same hysteria then that we have seen with 'Covid-19'? Some 250,000 Americans are admitted to hospital with pneumonia every year with about 50,000 cases proving fatal. About 65 million suffer respiratory disease every year and three million deaths makes this the third biggest cause of death worldwide. You only have to redesignate a portion of all these people 'Covid-19' and you have an instant global pandemic or the *appearance* of one. Why would doctors do this? They are told to do this and all but a few dare not refuse those who must be obeyed. Doctors in general are not researching their own

knowledge and instead take it direct and unquestioned from the authorities that own them and their careers. The authorities say they must now diagnose these symptoms 'Covid-19' and not flu, or whatever, and they do it. Dark suits say put 'Covid-19' on death certificates no matter what the cause of death and the doctors do it. Renegade Minds don't fall for the illusion that doctors and medical staff are all highly-intelligent, highly-principled, seekers of medical truth. *Some are*, but not the majority. They are repeaters, gofers, and yes sir, no sir, purveyors of what the system demands they purvey. The 'Covid' con is not merely confined to diseases of the lungs. Instructions to doctors to put 'Covid-19' on death certificates for anyone dying of *anything* within 28 days (or much more) of a positive test not testing for the 'virus' opened the floodgates. The term dying *with* 'Covid' and not *of* 'Covid' was coined to cover the truth. Whether it was a *with* or an *of* they were all added to the death numbers attributed to the 'deadly virus' compiled by national governments and globally by the Gates-funded Johns Hopkins operation in the United States that was so involved in those 'pandemic' simulations. Fraudulent deaths were added to the ever-growing list of fraudulent 'cases' from false positives from a false test. No wonder Professor Walter Ricciardi, scientific advisor to the Italian minister of health, said after the Lombardy hysteria had done its job that 'Covid' death rates were due to Italy having the second oldest population in the world and to *how hospitals record deaths*:

The way in which we code deaths in our country is very generous in the sense that all the people who die in hospitals with the coronavirus are deemed to be dying of the coronavirus. On re-evaluation by the National Institute of Health, only 12 per cent of death certificates have shown a direct causality from coronavirus, while 88 per cent of patients who have died have at least one pre-morbidity – many had two or three.

This is extraordinary enough when you consider the propaganda campaign to use Italy to terrify the world, but how can they even say twelve percent were genuine when the 'virus' has not been shown to exist, its 'code' is a computer program, and diagnosis comes from a test not testing for it? As in China, and soon the world, 'Covid-19' in

Italy was a redesignation of diagnosis. Lies and corruption were to become the real 'pandemic' fuelled by a pathetically-compliant medical system taking its orders from the tiny few at the top of their national hierarchy who answered to the World Health Organization which answers to Gates and the Cult. Doctors were told – ordered – to diagnose a particular set of symptoms 'Covid-19' and put that on the death certificate for any cause of death if the patient had tested positive with a test not testing for the virus or had 'Covid' symptoms like the flu. The United States even introduced big financial incentives to manipulate the figures with hospitals receiving £4,600 from the Medicare system for diagnosing someone with regular pneumonia, \$13,000 if they made the diagnosis from the same symptoms 'Covid-19' pneumonia, and \$39,000 if they put a 'Covid' diagnosed patient on a ventilator that would almost certainly kill them. A few – painfully and pathetically few – medical whistleblowers revealed (before Cult-owned YouTube deleted their videos) that they had been instructed to 'let the patient crash' and put them straight on a ventilator instead of going through a series of far less intrusive and dangerous methods as they would have done before the pandemic hoax began and the financial incentives kicked in. We are talking cold-blooded murder given that ventilators are so damaging to respiratory systems they are usually the last step before heaven awaits. Renegade Minds never fall for the belief that people in white coats are all angels of mercy and cannot be full-on psychopaths. I have explained in detail in *The Answer* how what I am describing here played out across the world coordinated by the World Health Organization through the medical hierarchies in almost every country.

Medical scientist calls it

Information about the non-existence of the 'virus' began to emerge for me in late March, 2020, and mushroomed after that. I was sent an email by Sir Julian Rose, a writer, researcher, and organic farming promotor, from a medical scientist friend of his in the United States. Even at that early stage in March the scientist was able to explain

how the 'Covid' hoax was being manipulated. He said there were no reliable tests for a specific 'Covid-19 virus' and nor were there any reliable agencies or media outlets for reporting numbers of actual 'Covid-19' cases. We have seen in the long period since then that he was absolutely right. 'Every action and reaction to Covid-19 is based on totally flawed data and we simply cannot make accurate assessments,' he said. Most people diagnosed with 'Covid-19' were showing nothing more than cold and flu-like symptoms 'because most coronavirus strains *are* nothing more than cold/flu-like symptoms'. We had farcical situations like an 84-year-old German man testing positive for 'Covid-19' and his nursing home ordered to quarantine only for him to be found to have a common cold. The scientist described back then why PCR tests and what he called the 'Mickey Mouse test kits' were useless for what they were claimed to be identifying. 'The idea these kits can isolate a specific virus like Covid-19 is nonsense,' he said. Significantly, he pointed out that 'if you want to create a totally false panic about a totally false pandemic – pick a coronavirus'. This is exactly what the Cult-owned Gates, World Economic Forum and Johns Hopkins University did with their Event 201 'simulation' followed by their real-life simulation called the 'pandemic'. The scientist said that all you had to do was select the sickest of people with respiratory-type diseases in a single location – 'say Wuhan' – and administer PCR tests to them. You can then claim that anyone showing 'viral sequences' similar to a coronavirus 'which will inevitably be quite a few' is suffering from a 'new' disease:

Since you already selected the sickest flu cases a fairly high proportion of your sample will go on to die. You can then say this 'new' virus has a CFR [case fatality rate] higher than the flu and use this to infuse more concern and do more tests which will of course produce more 'cases', which expands the testing, which produces yet more 'cases' and so on and so on. Before long you have your 'pandemic', and all you have done is use a simple test kit trick to convert the worst flu and pneumonia cases into something new that doesn't ACTUALLY EXIST [my emphasis].

He said that you then 'just run the same scam in other countries' and make sure to keep the fear message running high 'so that people

will feel panicky and less able to think critically'. The only problem to overcome was the fact *there is no* actual new deadly pathogen and only regular sick people. This meant that deaths from the 'new deadly pathogen' were going to be way too low for a real new deadly virus pandemic, but he said this could be overcome in the following ways – all of which would go on to happen:

1. You can claim this is just the beginning and more deaths are imminent [you underpin this with fantasy 'computer projections']. Use this as an excuse to quarantine everyone and then claim the quarantine prevented the expected millions of dead.
2. You can [say that people] 'minimizing' the dangers are irresponsible and bully them into not talking about numbers.
3. You can talk crap about made up numbers hoping to blind people with pseudoscience.
4. You can start testing well people (who, of course, will also likely have shreds of coronavirus [RNA] in them) and thus inflate your 'case figures' with 'asymptomatic carriers' (you will of course have to spin that to sound deadly even though any virologist knows the more symptom-less cases you have the less deadly is your pathogen).

The scientist said that if you take these simple steps 'you can have your own entirely manufactured pandemic up and running in weeks'. His analysis made so early in the hoax was brilliantly prophetic of what would actually unfold. Pulling all the information together in these recent chapters we have this is simple 1, 2, 3, of how you can delude virtually the entire human population into believing in a 'virus' that doesn't exist:

- A 'Covid case' is someone who tests positive with a test not testing for the 'virus'.
- A 'Covid death' is someone who dies of *any cause* within 28 days (or much longer) of testing positive with a test not testing for the 'virus'.
- Asymptomatic means there is nothing wrong with you, but they claim you can pass on what you don't have to justify locking

down (quarantining) healthy people in totality.

The foundations of the hoax are that simple. A study involving ten million people in Wuhan, published in November, 2020, demolished the whole lie about those without symptoms passing on the 'virus'. They found '300 asymptomatic cases' and traced their contacts to find that not one of them was detected with the 'virus'.

'Asymptomatic' patients and their contacts were isolated for no less than two weeks and nothing changed. I know it's all crap, but if you are going to claim that those without symptoms can transmit 'the virus' then you must produce evidence for that and they never have. Even World Health Organization official Dr Maria Van Kerkhove, head of the emerging diseases and zoonosis unit, said as early as June, 2020, that she doubted the validity of asymptomatic transmission. She said that 'from the data we have, it still seems to be rare that an asymptomatic person actually transmits onward to a secondary individual' and by 'rare' she meant that she couldn't cite any case of asymptomatic transmission.

The Ferguson factor

The problem for the Cult as it headed into March, 2020, when the script had lockdown due to start, was that despite all the manipulation of the case and death figures they still did not have enough people alleged to have died from 'Covid' to justify mass house arrest. This was overcome in the way the scientist described: 'You can claim this is just the beginning and more deaths are imminent ... Use this as an excuse to quarantine everyone and then claim the quarantine prevented the expected millions of dead.' Enter one Professor Neil Ferguson, the Gates-funded 'epidemiologist' at the Gates-funded Imperial College in London. Ferguson is Britain's Christian Drosten in that he has a dire record of predicting health outcomes, but is still called upon to advise government on the next health outcome when another 'crisis' comes along. This may seem to be a strange and ridiculous thing to do. Why would you keep turning for policy guidance to people who have a history of being

monumentally wrong? Ah, but it makes sense from the Cult point of view. These 'experts' keep on producing predictions that suit the Cult agenda for societal transformation and so it was with Neil Ferguson as he revealed his horrific (and clearly insane) computer model predictions that allowed lockdowns to be imposed in Britain, the United States and many other countries. Ferguson does not have even an A-level in biology and would appear to have no formal training in computer modelling, medicine or epidemiology, according to Derek Winton, an MSc in Computational Intelligence. He wrote an article somewhat aghast at what Ferguson did which included taking no account of respiratory disease 'seasonality' which means it is far worse in the winter months. Who would have thought that respiratory disease could be worse in the winter? Well, certainly not Ferguson.

The massively China-connected Imperial College and its bizarre professor provided the excuse for the long-incubated Chinese model of human control to travel westward at lightning speed. Imperial College confirms on its website that it collaborates with the Chinese Research Institute; publishes more than 600 research papers every year with Chinese research institutions; has 225 Chinese staff; 2,600 Chinese students – the biggest international group; 7,000 former students living in China which is the largest group outside the UK; and was selected for a tour by China's President Xi Jinping during his state visit to the UK in 2015. The college takes major donations from China and describes itself as the UK's number one university collaborator with Chinese research institutions. The China communist/fascist government did not appear phased by the woeful predictions of Ferguson and Imperial when during the lockdown that Ferguson induced the college signed a five-year collaboration deal with China tech giant Huawei that will have Huawei's indoor 5G network equipment installed at the college's West London tech campus along with an 'AI cloud platform'. The deal includes Chinese sponsorship of Imperial's Venture Catalyst entrepreneurship competition. Imperial is an example of the enormous influence the Chinese government has within British and North American

universities and research centres – and further afield. Up to 200 academics from more than a dozen UK universities are being investigated on suspicion of ‘unintentionally’ helping the Chinese government build weapons of mass destruction by ‘transferring world-leading research in advanced military technology such as aircraft, missile designs and cyberweapons’. Similar scandals have broken in the United States, but it’s all a coincidence. Imperial College serves the agenda in many other ways including the promotion of every aspect of the United Nations Agenda 21/2030 (the Great Reset) and produced computer models to show that human-caused ‘climate change’ is happening when in the real world it isn’t. Imperial College is driving the climate agenda as it drives the ‘Covid’ agenda (both Cult hoaxes) while Patrick Vallance, the UK government’s Chief Scientific Adviser on ‘Covid’, was named Chief Scientific Adviser to the UN ‘climate change’ conference known as COP26 hosted by the government in Glasgow, Scotland. ‘Covid’ and ‘climate’ are fundamentally connected.

Professor Woeful

From Imperial’s bosom came Neil Ferguson still advising government despite his previous disasters and it was announced early on that he and other key people like UK Chief Medical Adviser Chris Whitty had caught the ‘virus’ as the propaganda story was being sold. Somehow they managed to survive and we had Prime Minister Boris Johnson admitted to hospital with what was said to be a severe version of the ‘virus’ in this same period. His whole policy and demeanour changed when he returned to Downing Street. It’s a small world with these government advisors – especially in their communal connections to Gates – and Ferguson had partnered with Whitty to write a paper called ‘Infectious disease: Tough choices to reduce Ebola transmission’ which involved another scare-story that didn’t happen. Ferguson’s ‘models’ predicted that up to 150,000 could die from ‘mad cow disease’, or BSE, and its version in sheep if it was transmitted to humans. BSE was not transmitted and instead triggered by an organophosphate pesticide used to treat a pest on

cows. Fewer than 200 deaths followed from the human form. Models by Ferguson and his fellow incompetents led to the unnecessary culling of millions of pigs, cattle and sheep in the foot and mouth outbreak in 2001 which destroyed the lives and livelihoods of farmers and their families who had often spent decades building their herds and flocks. Vast numbers of these animals did not have foot and mouth and had no contact with the infection. Another 'expert' behind the cull was Professor Roy Anderson, a computer modeller at Imperial College specialising in the epidemiology of *human*, not animal, disease. Anderson has served on the Bill and Melinda Gates Grand Challenges in Global Health advisory board and chairs another Gates-funded organisation. Gates is everywhere.

In a precursor to the 'Covid' script Ferguson backed closing schools 'for prolonged periods' over the swine flu 'pandemic' in 2009 and said it would affect a third of the world population if it continued to spread at the speed he claimed to be happening. His mates at Imperial College said much the same and a news report said: 'One of the authors, the epidemiologist and disease modeller Neil Ferguson, who sits on the World Health Organisation's emergency committee for the outbreak, said the virus had "full pandemic potential".' Professor Liam Donaldson, the Chris Whitty of his day as Chief Medical Officer, said the worst case could see 30 percent of the British people infected by swine flu with 65,000 dying. Ferguson and Donaldson were indeed proved correct when at the end of the year the number of deaths attributed to swine flu was 392. The term 'expert' is rather liberally applied unfortunately, not least to complete idiots. Swine flu 'projections' were great for GlaxoSmithKline (GSK) as millions rolled in for its Pandemrix influenza vaccine which led to brain damage with children most affected. The British government (taxpayers) paid out more than £60 million in compensation after GSK was given immunity from prosecution. Yet another 'Covid' déjà vu. Swine flu was supposed to have broken out in Mexico, but Dr Wolfgang Wodarg, a German doctor, former member of parliament and critic of the 'Covid' hoax, observed 'the spread of swine flu' in Mexico City at the time. He

said: 'What we experienced in Mexico City was a very mild flu which did not kill more than usual – which killed even fewer people than usual.' Hyping the fear against all the facts is not unique to 'Covid' and has happened many times before. Ferguson is reported to have over-estimated the projected death toll of bird flu (H5N1) by some three million-fold, but bird flu vaccine makers again made a killing from the scare. This is some of the background to the Neil Ferguson who produced the perfectly-timed computer models in early 2020 predicting that half a million people would die in Britain without draconian lockdown and 2.2 million in the United States. Politicians panicked, people panicked, and lockdowns of alleged short duration were instigated to 'flatten the curve' of cases gleaned from a test not testing for the 'virus'. I said at the time that the public could forget the 'short duration' bit. This was an agenda to destroy the livelihoods of the population and force them into mass control through dependency and there was going to be nothing 'short' about it. American researcher Daniel Horowitz described the consequences of the 'models' spewed out by Gates-funded Ferguson and Imperial College:

What led our government and the governments of many other countries into panic was a single Imperial College of UK study, funded by global warming activists, that predicted 2.2 million deaths if we didn't lock down the country. In addition, the reported 8-9% death rate in Italy scared us into thinking there was some other mutation of this virus that they got, which might have come here.

Together with the fact that we were finally testing and had the ability to actually report new cases, we thought we were headed for a death spiral. But again ... we can't flatten a curve if we don't know when the curve started.

How about it *never* started?

Giving them what they want

An investigation by German news outlet *Welt Am Sonntag* (*World on Sunday*) revealed how in March, 2020, the German government gathered together 'leading scientists from several research institutes and universities' and 'together, they were to produce a [modelling]

paper that would serve as legitimization for further tough political measures'. The Cult agenda was justified by computer modelling not based on evidence or reality; it was specifically constructed to justify the Cult demand for lockdowns all over the world to destroy the independent livelihoods of the global population. All these modellers and everyone responsible for the 'Covid' hoax have a date with a trial like those in Nuremberg after World War Two when Nazis faced the consequences of their war crimes. These corrupt-beyond-belief 'modellers' wrote the paper according to government instructions and it said that if lockdown measures were lifted then up to one million Germans would die from 'Covid-19' adding that some would die 'agonizingly at home, gasping for breath' unable to be treated by hospitals that couldn't cope. All lies. No matter – it gave the Cult all that it wanted. What did long-time government 'modeller' Neil Ferguson say? If the UK and the United States didn't lockdown half a million would die in Britain and 2.2 million Americans. Anyone see a theme here? 'Modellers' are such a crucial part of the lockdown strategy that we should look into their background and follow the money. Researcher Rosemary Frei produced an excellent article headlined 'The Modelling-paper Mafiosi'. She highlights a guy called John Edmunds, a British epidemiologist, and professor in the Faculty of Epidemiology and Population Health at the London School of Hygiene & Tropical Medicine. He studied at Imperial College. Edmunds is a member of government 'Covid' advisory bodies which have been dictating policy, the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) and the Scientific Advisory Group for Emergencies (SAGE).

Ferguson, another member of NERVTAG and SAGE, led the way with the original 'virus' and Edmunds has followed in the 'variant' stage and especially the so-called UK or Kent variant known as the 'Variant of Concern' (VOC) B.1.1.7. He said in a co-written report for the Centre for Mathematical modelling of Infectious Diseases at the London School of Hygiene and Tropical Medicine, with input from the Centre's 'Covid-19' Working Group, that there was 'a realistic

possibility that VOC B.1.1.7 is associated with an increased risk of death compared to non-VOC viruses'. Fear, fear, fear, get the vaccine, fear, fear, fear, get the vaccine. Rosemary Frei reveals that almost all the paper's authors and members of the modelling centre's 'Covid-19' Working Group receive funding from the Bill and Melinda Gates Foundation and/or the associated Gates-funded Wellcome Trust. The paper was published by e-journal *Medrx* ^{xiv} which only publishes papers not peer-reviewed and the journal was established by an organisation headed by Facebook's Mark Zuckerberg and his missus. What a small world it is. Frei discovered that Edmunds is on the Scientific Advisory Board of the Coalition for Epidemic Preparedness Innovations (CEPI) which was established by the Bill and Melinda Gates Foundation, Klaus Schwab's Davos World Economic Forum and Big Pharma giant Wellcome. CEPI was 'launched in Davos [in 2017] to develop vaccines to stop future epidemics', according to its website. 'Our mission is to accelerate the development of vaccines against emerging infectious diseases and enable equitable access to these vaccines for people during outbreaks.' What kind people they are. Rosemary Frei reveals that Public Health England (PHE) director Susan Hopkins is an author of her organisation's non-peer-reviewed reports on 'new variants'. Hopkins is a professor of infectious diseases at London's Imperial College which is gifted tens of millions of dollars a year by the Bill and Melinda Gates Foundation. Gates-funded modelling disaster Neil Ferguson also co-authors Public Health England reports and he spoke in December, 2020, about the potential danger of the B.1.1.7. 'UK variant' promoted by Gates-funded modeller John Edmunds. When I come to the 'Covid vaccines' the 'new variants' will be shown for what they are – bollocks.

Connections, connections

All these people and modellers are lockdown-obsessed or, put another way, they demand what the Cult demands. Edmunds said in January, 2021, that to ease lockdowns too soon would be a disaster and they had to 'vaccinate much, much, much more widely than the

elderly'. Rosemary Frei highlights that Edmunds is married to Jeanne Pimenta who is described in a LinkedIn profile as director of epidemiology at GlaxoSmithKline (GSK) and she held shares in the company. Patrick Vallance, co-chair of SAGE and the government's Chief Scientific Adviser, is a former executive of GSK and has a deferred bonus of shares in the company worth £600,000. GSK has serious business connections with Bill Gates and is collaborating with mRNA-'vaccine' company CureVac to make 'vaccines' for the new variants that Edmunds is talking about. GSK is planning a 'Covid vaccine' with drug giant Sanofi. Puppets Prime Minister Boris Johnson announced in the spring of 2021 that up to 60 million vaccine doses were to be made at the GSK facility at Barnard Castle in the English North East. Barnard Castle, with a population of just 6,000, was famously visited in breach of lockdown rules in April, 2020, by Johnson aide Dominic Cummings who said that he drove there 'to test his eyesight' before driving back to London. Cummings would be better advised to test his integrity – not that it would take long. The GSK facility had nothing to do with his visit then although I'm sure Patrick Vallance would have been happy to arrange an introduction and some tea and biscuits. Ruthless psychopath Gates has made yet another fortune from vaccines in collaboration with Big Pharma companies and gushes at the phenomenal profits to be made from vaccines – more than a 20-to-1 return as he told one interviewer. Gates also tweeted in December, 2019, with the foreknowledge of what was coming: 'What's next for our foundation? I'm particularly excited about what the next year could mean for one of the best buys in global health: vaccines.'

Modeller John Edmunds is a big promotor of vaccines as all these people appear to be. He's the dean of the London School of Hygiene & Tropical Medicine's Faculty of Epidemiology and Population Health which is primarily funded by the Bill and Melinda Gates Foundation and the Gates-established and funded GAVI vaccine alliance which is the Gates vehicle to vaccinate the world. The organisation Doctors Without Borders has described GAVI as being 'aimed more at supporting drug-industry desires to promote new

products than at finding the most efficient and sustainable means for fighting the diseases of poverty'. But then that's why the psychopath Gates created it. John Edmunds said in a video that the London School of Hygiene & Tropical Medicine is involved in every aspect of vaccine development including large-scale clinical trials. He contends that mathematical modelling can show that vaccines protect individuals and society. That's on the basis of shit in and shit out, I take it. Edmunds serves on the UK Vaccine Network as does Ferguson and the government's foremost 'Covid' adviser, the grim-faced, dark-eyed Chris Whitty. The Vaccine Network says it works 'to support the government to identify and shortlist targeted investment opportunities for the most promising vaccines and vaccine technologies that will help combat infectious diseases with epidemic potential, and to address structural issues related to the UK's broader vaccine infrastructure'. Ferguson is acting Director of the Imperial College Vaccine Impact Modelling Consortium which has funding from the Bill and Melina Gates Foundation and the Gates-created GAVI 'vaccine alliance'. Anyone wonder why these characters see vaccines as the answer to every problem? Ferguson is wildly enthusiastic in his support for GAVI's campaign to vaccinate children en masse in poor countries. You would expect someone like Gates who has constantly talked about the need to reduce the population to want to fund vaccines to keep more people alive. I'm sure that's why he does it. The John Edmunds London School of Hygiene & Tropical Medicine (LSHTM) has a Vaccines Manufacturing Innovation Centre which develops, tests and commercialises vaccines. Rosemary Frei writes:

The vaccines centre also performs affiliated activities like combating 'vaccine hesitancy'. The latter includes the Vaccine Confidence Project. The project's stated purpose is, among other things, 'to provide analysis and guidance for early response and engagement with the public to ensure sustained confidence in vaccines and immunisation'. The Vaccine Confidence Project's director is LSHTM professor Heidi Larson. For more than a decade she's been researching how to combat vaccine hesitancy.

How the bloody hell can blokes like John Edmunds and Neil Ferguson with those connections and financial ties model 'virus' case

and death projections for the government and especially in a way that gives their paymasters like Gates exactly what they want? It's insane, but this is what you find throughout the world.

'Covid' is not dangerous, oops, wait, yes it is

Only days before Ferguson's nightmare scenario made Jackboot Johnson take Britain into a China-style lockdown to save us from a deadly 'virus' the UK government website gov.uk was reporting something very different to Ferguson on a page of official government guidance for 'high consequence infectious diseases (HCID)'. It said this about 'Covid-19':

As of 19 March 2020, COVID-19 is no longer considered to be a high consequence infectious diseases (HCID) in the UK [my emphasis]. The 4 nations public health HCID group made an interim recommendation in January 2020 to classify COVID-19 as an HCID. This was based on consideration of the UK HCID criteria about the virus and the disease with information available during the early stages of the outbreak.

Now that more is known about COVID-19, the public health bodies in the UK have reviewed the most up to date information about COVID-19 against the UK HCID criteria. They have determined that several features have now changed; in particular, more information is available about mortality rates (low overall), and there is now greater clinical awareness and a specific and sensitive laboratory test, the availability of which continues to increase. The Advisory Committee on Dangerous Pathogens (ACDP) is also of the opinion that COVID-19 should no longer be classified as an HCID.

Soon after the government had been exposed for downgrading the risk they upgraded it again and everyone was back to singing from the same Cult hymn book. Ferguson and his fellow Gates clones indicated that lockdowns and restrictions would have to continue until a Gates-funded vaccine was developed. Gates said the same because Ferguson and his like were repeating the Gates script which is the Cult script. 'Flatten the curve' became an ongoing nightmare of continuing lockdowns with periods in between of severe restrictions in pursuit of destroying independent incomes and had nothing to do with protecting health about which the Cult gives not a shit. Why wouldn't Ferguson be pushing a vaccine 'solution' when he's owned by vaccine-obsessive Gates who makes a fortune from them and

when Ferguson heads the Vaccine Impact Modelling Consortium at Imperial College funded by the Gates Foundation and GAVI, the 'vaccine alliance', created by Gates as his personal vaccine promotion operation? To compound the human catastrophe that Ferguson's 'models' did so much to create he was later exposed for breaking his own lockdown rules by having sexual liaisons with his married girlfriend Antonia Staats at his home while she was living at another location with her husband and children. Staats was a 'climate' activist and senior campaigner at the Soros-funded Avaaz which I wouldn't trust to tell me that grass is green. Ferguson had to resign as a government advisor over this hypocrisy in May, 2020, but after a period of quiet he was back being quoted by the ridiculous media on the need for more lockdowns and a vaccine rollout. Other government-advising 'scientists' from Imperial College held the fort in his absence and said lockdown could be indefinite until a vaccine was found. The Cult script was being sung by the payrolled choir. I said there was no intention of going back to 'normal' when the 'vaccine' came because the 'vaccine' is part of a very different agenda that I will discuss in Human 2.0. Why would the Cult want to let the world go back to normal when destroying that normal forever was the whole point of what was happening? House arrest, closing businesses and schools through lockdown, (un)social distancing and masks all followed the Ferguson fantasy models. Again as I predicted (these people are so predictable) when the 'vaccine' arrived we were told that house arrest, lockdown, (un)social distancing and masks would still have to continue. I will deal with the masks in the next chapter because they are of fundamental importance.

Where's the 'pandemic'?

Any mildly in-depth assessment of the figures revealed what was really going on. Cult-funded and controlled organisations still have genuine people working within them such is the number involved. So it is with Genevieve Briand, assistant program director of the Applied Economics master's degree program at Johns Hopkins

University. She analysed the impact that 'Covid-19' had on deaths from *all* causes in the United States using official data from the CDC for the period from early February to early September, 2020. She found that allegedly 'Covid' *related*-deaths exceeded those from heart disease which she found strange with heart disease always the biggest cause of fatalities. Her research became even more significant when she noted the sudden decline in 2020 of *all* non-'Covid' deaths: 'This trend is completely contrary to the pattern observed in all previous years ... the total decrease in deaths by other causes almost exactly equals the increase in deaths by Covid-19.' This was such a game, set and match in terms of what was happening that Johns Hopkins University deleted the article on the grounds that it 'was being used to support false and dangerous inaccuracies about the impact of the pandemic'. No – because it exposed the scam from official CDC figures and this was confirmed when those figures were published in January, 2021. Here we can see the effect of people dying from heart attacks, cancer, road accidents and gunshot wounds – *anything* – having 'Covid-19' on the death certificate along with those diagnosed from 'symptoms' who had even not tested positive with a test not testing for the 'virus'. I am not kidding with the gunshot wounds, by the way. Brenda Bock, coroner in Grand County, Colorado, revealed that two gunshot victims tested positive for the 'virus' within the previous 30 days and were therefore classified as 'Covid deaths'. Bock said: 'These two people had tested positive for Covid, but that's not what killed them. A gunshot wound is what killed them.' She said she had not even finished her investigation when the state listed the gunshot victims as deaths due to the 'virus'. The death and case figures for 'Covid-19' are an absolute joke and yet they are repeated like parrots by the media, politicians and alleged medical 'experts'. The official Cult narrative is the only show in town.

Genevieve Briand found that deaths from all causes were not exceptional in 2020 compared with previous years and a Spanish magazine published figures that said the same about Spain which was a 'Covid' propaganda hotspot at one point. *Discovery Salud*, a

health and medicine magazine, quoted government figures which showed how 17,000 *fewer* people died in Spain in 2020 than in 2019 and more than 26,000 fewer than in 2018. The age-standardised mortality rate for England and Wales when age distribution is taken into account was significantly lower in 2020 than the 1970s, 80s and 90s, and was only the ninth highest since 2000. Where is the 'pandemic'?

Post mortems and autopsies virtually disappeared for 'Covid' deaths amid claims that 'virus-infected' bodily fluids posed a risk to those carrying out the autopsy. This was rejected by renowned German pathologist and forensic doctor Klaus Püschel who said that he and his staff had by then done 150 autopsies on 'Covid' patients with no problems at all. He said they were needed to know why some 'Covid' patients suffered blood clots and not severe respiratory infections. The 'virus' is, after all, called SARS or 'severe acute respiratory syndrome'. I highlighted in the spring of 2020 this phenomenon and quoted New York intensive care doctor Cameron Kyle-Sidell who posted a soon deleted YouTube video to say that they had been told to prepare to treat an infectious disease called 'Covid-19', but that was not what they were dealing with. Instead he likened the lung condition of the most severely ill patients to what you would expect with cabin depressurisation in a plane at 30,000 feet or someone dropped on the top of Everest without oxygen or acclimatisation. I have never said this is not happening to a small minority of alleged 'Covid' patients – I am saying this is not caused by a phantom 'contagious virus'. Indeed Kyle-Sidell said that 'Covid-19' was not the disease they were told was coming their way. 'We are operating under a medical paradigm that is untrue,' he said, and he believed they were treating the wrong disease: 'These people are being slowly starved of oxygen.' Patients would take off their oxygen masks in a state of fear and stress and while they were blue in the face on the brink of death. They did not look like patients dying of pneumonia. You can see why they don't want autopsies when their virus doesn't exist and there is another condition in some people that they don't wish to be uncovered. I should add here that

the 5G system of millimetre waves was being rapidly introduced around the world in 2020 and even more so now as they fire 5G at the Earth from satellites. At 60 gigahertz within the 5G range that frequency interacts with the oxygen molecule and stops people breathing in sufficient oxygen to be absorbed into the bloodstream. They are installing 5G in schools and hospitals. The world is not mad or anything. 5G can cause major changes to the lungs and blood as I detail in *The Answer* and these consequences are labelled 'Covid-19', the alleged symptoms of which can be caused by 5G and other electromagnetic frequencies as cells respond to radiation poisoning.

The 'Covid death' scam

Dr Scott Jensen, a Minnesota state senator and medical doctor, exposed 'Covid' Medicare payment incentives to hospitals and death certificate manipulation. He said he was sent a seven-page document by the US Department of Health 'coaching' him on how to fill out death certificates which had never happened before. The document said that he didn't need to have a laboratory test for 'Covid-19' to put that on the death certificate and that shocked him when death certificates are supposed to be about facts. Jensen described how doctors had been 'encouraged, if not pressured' to make a diagnosis of 'Covid-19' if they thought it was probable or '*presumed*'. No positive test was necessary – not that this would have mattered anyway. He said doctors were told to diagnose 'Covid' by symptoms when these were the same as colds, allergies, other respiratory problems, and certainly with influenza which 'disappeared' in the 'Covid' era. A common sniffle was enough to get the dreaded verdict. Ontario authorities decreed that a single care home resident with *one* symptom from a long list must lead to the isolation of the entire home. Other courageous doctors like Jensen made the same point about death figure manipulation and how deaths by other causes were falling while 'Covid-19 deaths' were rising at the same rate due to re-diagnosis. Their videos rarely survive long on YouTube with its Cult-supporting algorithms courtesy of CEO Susan Wojcicki and her bosses at Google. Figure-tampering was so glaring

and ubiquitous that even officials were letting it slip or outright saying it. UK chief scientific adviser Patrick Vallance said on one occasion that 'Covid' on the death certificate doesn't mean 'Covid' was the cause of death (so why the hell is it there?) and we had the rare sight of a BBC reporter telling the truth when she said: 'Someone could be successfully treated for Covid, in say April, discharged, and then in June, get run over by a bus and die ... That person would still be counted as a Covid death in England.' Yet the BBC and the rest of the world media went on repeating the case and death figures as if they were real. Illinois Public Health Director Dr Ngozi Ezike revealed the deceit while her bosses must have been clenching their buttocks:

If you were in a hospice and given a few weeks to live and you were then found to have Covid that would be counted as a Covid death. [There might be] a clear alternate cause, but it is still listed as a Covid death. So everyone listed as a Covid death doesn't mean that was the cause of the death, but that they had Covid at the time of death.

Yes, a 'Covid virus' never shown to exist and tested for with a test not testing for the 'virus'. In the first period of the pandemic hoax through the spring of 2020 the process began of designating almost everything a 'Covid' death and this has continued ever since. I sat in a restaurant one night listening to a loud conversation on the next table where a family was discussing in bewilderment how a relative who had no symptoms of 'Covid', and had died of a long-term problem, could have been diagnosed a death by the 'virus'. I could understand their bewilderment. If they read this book they will know why this medical fraud has been perpetrated the world over.

Some media truth shock

The media ignored the evidence of death certificate fraud until eventually one columnist did speak out when she saw it first-hand. Bel Mooney is a long-time national newspaper journalist in Britain currently working for the *Daily Mail*. Her article on February 19th, 2021, carried this headline: 'My dad Ted passed three Covid tests

and died of a chronic illness yet he's officially one of Britain's 120,000 victims of the virus and is far from alone ... so how many more are there?' She told how her 99-year-old father was in a care home with a long-standing chronic obstructive pulmonary disease and vascular dementia. Maybe, but he was still aware enough to tell her from the start that there was no 'virus' and he refused the 'vaccine' for that reason. His death was not unexpected given his chronic health problems and Mooney said she was shocked to find that 'Covid-19' was declared the cause of death on his death certificate. She said this was a 'bizarre and unacceptable untruth' for a man with long-time health problems who had tested negative twice at the home for the 'virus'. I was also shocked by this story although not by what she said. I had been highlighting the death certificate manipulation for ten months. It was the confirmation that a professional full-time journalist only realised this was going on when it affected her directly and neither did she know that whether her dad tested positive or negative was irrelevant with the test not testing for the 'virus'. Where had she been? She said she did not believe in 'conspiracy theories' without knowing I'm sure that this and 'conspiracy theorists' were terms put into widespread circulation by the CIA in the 1960s to discredit those who did not accept the ridiculous official story of the Kennedy assassination. A blanket statement of 'I don't believe in conspiracy theories' is always bizarre. The dictionary definition of the term alone means the world is drowning in conspiracies. What she said was even more daft when her dad had just been affected by the 'Covid' conspiracy. Why else does she think that 'Covid-19' was going on the death certificates of people who died of something else?

To be fair once she saw from personal experience what was happening she didn't mince words. Mooney was called by the care home on the morning of February 9th to be told her father had died in his sleep. When she asked for the official cause of death what came back was 'Covid-19'. Mooney challenged this and was told there had been deaths from Covid on the dementia floor (confirmed by a test not testing for the 'virus') so they considered it 'reasonable

to assume'. 'But doctor,' Mooney rightly protested, 'an assumption isn't a diagnosis.' She said she didn't blame the perfectly decent and sympathetic doctor – 'he was just doing his job'. Sorry, but that's *bullshit*. He wasn't doing his job at all. He was putting a false cause of death on the death certificate and that is a criminal offence for which he should be brought to account and the same with the millions of doctors worldwide who have done the same. They were not doing their job they were following orders and that must not wash at new Nuremberg trials any more than it did at the first ones. Mooney's doctor was 'assuming' (presuming) as he was told to, but 'just following orders' makes no difference to his actions. A doctor's job is to serve the patient and the truth, not follow orders, but that's what they have done all over the world and played a central part in making the 'Covid' hoax possible with all its catastrophic consequences for humanity. Shame on them and they must answer for their actions. Mooney said her disquiet worsened when she registered her father's death by telephone and was told by the registrar there had been very many other cases like hers where 'the deceased' had not tested positive for 'Covid' yet it was recorded as the cause of death. The test may not matter, but those involved at their level *think* it matters and it shows a callous disregard for accurate diagnosis. The pressure to do this is coming from the top of the national 'health' pyramids which in turn obey the World Health Organization which obeys Gates and the Cult. Mooney said the registrar agreed that this must distort the national figures adding that 'the strangest thing is that every winter we record countless deaths from flu, and this winter there have been none. Not one!' She asked if the registrar thought deaths from flu were being misdiagnosed and lumped together with 'Covid' deaths. The answer was a 'puzzled yes'. Mooney said that the funeral director said the same about 'Covid' deaths which had nothing to do with 'Covid'. They had lost count of the number of families upset by this and other funeral companies in different countries have had the same experience. Mooney wrote:

The nightly shroud-waving and shocking close-ups of pain imposed on us by the TV news bewildered and terrified the population into eager compliance with lockdowns. We were invited to 'save the NHS' and to grieve for strangers – the real-life loved ones behind those shocking death counts. Why would the public imagine what I now fear, namely that the way Covid-19 death statistics are compiled might make the numbers seem greater than they are?

Oh, just a little bit – like 100 percent.

Do the maths

Mooney asked why a country would wish to skew its mortality figures by wrongly certifying deaths? What had been going on? Well, if you don't believe in conspiracies you will never find the answer which is that *it's a conspiracy*. She did, however, describe what she had discovered as a 'national scandal'. In reality it's a global scandal and happening everywhere. Pillars of this conspiracy were all put into place before the button was pressed with the Drosten PCR protocol and high amplifications to produce the cases and death certificate changes to secure illusory 'Covid' deaths. Mooney notes that normally two doctors were needed to certify a death, with one having to know the patient, and how the rules were changed in the spring of 2020 to allow one doctor to do this. In the same period 'Covid deaths' were decreed to be all cases where Covid-19 was put on the death certificate even without a positive test or any symptoms. Mooney asked: 'How many of the 30,851 (as of January 15) care home resident deaths with Covid-19 on the certificate (32.4 per cent of all deaths so far) were based on an assumption, like that of my father? And what has that done to our national psyche?' All of them is the answer to the first question and it has devastated and dismantled the national psyche, actually the global psyche, on a colossal scale. In the UK case and death data is compiled by organisations like Public Health England (PHE) and the Office for National Statistics (ONS). Mooney highlights the insane policy of counting a death from any cause as 'Covid-19' if this happens within 28 days of a positive test (with a test not testing for the 'virus') and she points out that ONS statistics reflect deaths 'involving Covid' 'or due to Covid' which meant in practice any

death where 'Covid-19' was mentioned on the death certificate. She described the consequences of this fraud:

Most people will accept the narrative they are fed, so panicky governments here and in Europe witnessed the harsh measures enacted in totalitarian China and jumped into lockdown. Headlines about Covid deaths tolled like the knell that would bring doomsday to us all. Fear stalked our empty streets. Politicians parroted the frankly ridiculous aim of 'zero Covid' and shut down the economy, while most British people agreed that lockdown was essential and (astonishingly to me, as a patriotic Brit) even wanted more restrictions.

For what? Lies on death certificates? Never mind the grim toll of lives ruined, suicides, schools closed, rising inequality, depression, cancelled hospital treatments, cancer patients in a torture of waiting, poverty, economic devastation, loneliness, families kept apart, and so on. How many lives have been lost as a direct result of lockdown?

She said that we could join in a national chorus of shock and horror at reaching the 120,000 death toll which was surely certain to have been totally skewed all along, but what about the human cost of lockdown justified by these 'death figures'? *The British Medical Journal* had reported a 1,493 percent increase in cases of children taken to Great Ormond Street Hospital with abusive head injuries alone and then there was the effect on families:

Perhaps the most shocking thing about all this is that families have been kept apart – and obeyed the most irrational, changing rules at the whim of government – because they believed in the statistics. They succumbed to fear, which his generation rejected in that war fought for freedom. Dad (God rest his soul) would be angry. And so am I.

Another theme to watch is that in the winter months when there are more deaths from all causes they focus on 'Covid' deaths and in the summer when the British Lung Foundation says respiratory disease plummets by 80 percent they rage on about 'cases'. Either way fascism on population is always the answer.

Nazi eugenics in the 21st century

Elderly people in care homes have been isolated from their families month after lonely month with no contact with relatives and grandchildren who were banned from seeing them. We were told

that lockdown fascism was to 'protect the vulnerable' like elderly people. At the same time Do Not Resuscitate (DNR) orders were placed on their medical files so that if they needed resuscitation it wasn't done and 'Covid-19' went on their death certificates. Old people were not being 'protected' they were being culled – murdered in truth. DNR orders were being decreed for disabled and young people with learning difficulties or psychological problems. The UK Care Quality Commission, a non-departmental body of the Department of Health and Social Care, found that 34 percent of those working in health and social care were pressured into placing 'do not attempt cardiopulmonary resuscitation' orders on 'Covid' patients who suffered from disabilities and learning difficulties without involving the patient or their families in the decision. UK judges ruled that an elderly woman with dementia should have the DNA-manipulating 'Covid vaccine' against her son's wishes and that a man with severe learning difficulties should have the jab despite his family's objections. Never mind that many had already died. The judiciary always supports doctors and government in fascist dictatorships. They wouldn't dare do otherwise. A horrific video was posted showing fascist officers from Los Angeles police forcibly giving the 'Covid' shot to women with special needs who were screaming that they didn't want it. The same fascists are seen giving the jab to a sleeping elderly woman in a care home. This is straight out of the Nazi playbook. Hitler's Nazis committed mass murder of the mentally ill and physically disabled throughout Germany and occupied territories in the programme that became known as Aktion T4, or just T4. Sabbatian-controlled Hitler and his grotesque crazies set out to kill those they considered useless and unnecessary. The Reich Committee for the Scientific Registering of Hereditary and Congenital Illnesses registered the births of babies identified by physicians to have 'defects'. By 1941 alone more than 5,000 children were murdered by the state and it is estimated that in total the number of innocent people killed in Aktion T4 was between 275,000 and 300,000. Parents were told their children had been sent away for 'special treatment' never to return. It is rather pathetic to see claims about plans for new extermination camps being dismissed today

when the same force behind current events did precisely that 80 years ago. Margaret Sanger was a Cult operative who used 'birth control' to sanitise her programme of eugenics. Organisations she founded became what is now Planned Parenthood. Sanger proposed that 'the whole dysgenic population would have its choice of segregation or sterilization'. These included epileptics, 'feeble-minded', and prostitutes. Sanger opposed charity because it perpetuated 'human waste'. She reveals the Cult mentality and if anyone thinks that extermination camps are a 'conspiracy theory' their naivety is touching if breathtakingly stupid.

If you don't believe that doctors can act with callous disregard for their patients it is worth considering that doctors and medical staff agreed to put government-decreed DNR orders on medical files and do nothing when resuscitation is called for. I don't know what you call such people in your house. In mine they are Nazis from the Josef Mengele School of Medicine. Phenomenal numbers of old people have died worldwide from the effects of lockdown, depression, lack of treatment, the 'vaccine' (more later) and losing the will to live. A common response at the start of the manufactured pandemic was to remove old people from hospital beds and transfer them to nursing homes. The decision would result in a mass cull of elderly people in those homes through lack of treatment – *not* 'Covid'. Care home whistleblowers have told how once the 'Covid' era began doctors would not come to their homes to treat patients and they were begging for drugs like antibiotics that often never came. The most infamous example was ordered by New York governor Andrew Cuomo, brother of a moronic CNN host, who amazingly was given an Emmy Award for his handling of the 'Covid crisis' by the ridiculous Wokers that hand them out. Just how ridiculous could be seen in February, 2021, when a Department of Justice and FBI investigation began into how thousands of old people in New York died in nursing homes after being discharged from hospital to make way for 'Covid' patients on Cuomo's say-so – and how he and his staff covered up these facts. This couldn't have happened to a nicer psychopath. Even then there was a 'Covid' spin. Reports said that

thousands of old people who tested positive for 'Covid' in hospital were transferred to nursing homes to both die of 'Covid' and transmit it to others. No – they were in hospital because they were ill and the fact that they tested positive with a test not testing for the 'virus' is irrelevant. They were ill often with respiratory diseases ubiquitous in old people near the end of their lives. Their transfer out of hospital meant that their treatment stopped and many would go on to die.

They're old. Who gives a damn?

I have exposed in the books for decades the Cult plan to cull the world's old people and even to introduce at some point what they call a 'demise pill' which at a certain age everyone would take and be out of here by law. In March, 2021, Spain legalised euthanasia and assisted suicide following the Netherlands, Belgium, Luxembourg and Canada on the Tiptoe to the demise pill. Treatment of old people by many 'care' homes has been a disgrace in the 'Covid' era. There are many, many, caring staff – I know some. There have, however, been legions of stories about callous treatment of old people and their families. Police were called when families came to take their loved ones home in the light of isolation that was killing them. They became prisoners of the state. Care home residents in insane, fascist Ontario, Canada, were not allowed to leave their *room* once the 'Covid' hoax began. UK staff have even wheeled elderly people away from windows where family members were talking with them. Oriana Criscuolo from Stockport in the English North West dropped off some things for her 80-year-old father who has Parkinson's disease and dementia and she wanted to wave to him through a ground-floor window. She was told that was 'illegal'. When she went anyway they closed the curtains in the middle of the day. Oriana said:

It's just unbelievable. I cannot understand how care home staff – people who are being paid to care – have become so uncaring. Their behaviour is inhumane and cruel. It's beyond belief.

She was right and this was not a one-off. What a way to end your life in such loveless circumstances. UK registered nurse Nicky Millen, a proper old school nurse for 40 years, said that when she started her career care was based on dignity, choice, compassion and empathy. Now she said 'the things that are important to me have gone out of the window.' She was appalled that people were dying without their loved ones and saying goodbye on iPads. Nicky described how a distressed 89-year-old lady stroked her face and asked her 'how many paracetamol would it take to finish me off'. Life was no longer worth living while not seeing her family. Nicky said she was humiliated in front of the ward staff and patients for letting the lady stroke her face and giving her a cuddle. Such is the dehumanisation that the 'Covid' hoax has brought to the surface. Nicky worked in care homes where patients told her they were being held prisoner. 'I want to live until I die', one said to her. 'I had a lady in tears because she hadn't seen her great-grandson.' Nicky was compassionate old school meeting psychopathic New Normal. She also said she had worked on a 'Covid' ward with no 'Covid' patients. Jewish writer Shai Held wrote an article in March, 2020, which was headlined 'The Staggering, Heartless Cruelty Toward the Elderly'. What he described was happening from the earliest days of lockdown. He said 'the elderly' were considered a group and not unique individuals (the way of the Woke). Shai Held said:

Notice how the all-too-familiar rhetoric of dehumanization works: 'The elderly' are bunched together as a faceless mass, all of them considered culprits and thus effectively deserving of the suffering the pandemic will inflict upon them. Lost entirely is the fact that the elderly are individual human beings, each with a distinctive face and voice, each with hopes and dreams, memories and regrets, friendships and marriages, loves lost and loves sustained.

'The elderly' have become another dehumanised group for which anything goes and for many that has resulted in cold disregard for their rights and their life. The distinctive face that Held talks about is designed to be deleted by masks until everyone is part of a faceless mass.

'War-zone' hospitals myth

Again and again medical professionals have told me what was really going on and how hospitals 'overrun like war zones' according to the media were virtually empty. The mantra from medical whistleblowers was please don't use my name or my career is over. Citizen journalists around the world sneaked into hospitals to film evidence exposing the 'war-zone' lie. They really *were* largely empty with closed wards and operating theatres. I met a hospital worker in my town on the Isle of Wight during the first lockdown in 2020 who said the only island hospital had never been so quiet. Lockdown was justified by the psychopaths to stop hospitals being overrun. At the same time that the island hospital was near-empty the military arrived here to provide *extra beds*. It was all propaganda to ramp up the fear to ensure compliance with fascism as were never-used temporary hospitals with thousands of beds known as Nightingales and never-used make-shift mortuaries opened by the criminal UK government. A man who helped to install those extra island beds attributed to the army said they were never used and the hospital was empty. Doctors and nurses 'stood around talking or on their phones, wandering down to us to see what we were doing'. There were no masks or social distancing. He accused the useless local island paper, the *County Press*, of 'pumping the fear as if our hospital was overrun and we only have one so it should have been'. He described ambulances parked up with crews outside in deck chairs. When his brother called an ambulance he was told there was a two-hour backlog which he called 'bullshit'. An old lady on the island fell 'and was in a bad way', but a caller who rang for an ambulance was told the situation wasn't urgent enough. Ambulance stations were working under capacity while people would hear ambulances with sirens blaring driving through the streets. When those living near the stations realised what was going on they would follow them as they left, circulated around an urban area with the sirens going, and then came back without stopping. All this was to increase levels of fear and the same goes for the 'ventilator shortage crisis' that cost tens of millions for hastily produced ventilators never to be used.

Ambulance crews that agreed to be exploited in this way for fear propaganda might find themselves a mirror. I wish them well with that. Empty hospitals were the obvious consequence of treatment and diagnoses of non-'Covid' conditions cancelled and those involved handed a death sentence. People have been dying at home from undiagnosed and untreated cancer, heart disease and other life-threatening conditions to allow empty hospitals to deal with a 'pandemic' that wasn't happening.

Death of the innocent

'War-zones' have been laying off nursing staff, even doctors where they can. There was no work for them. Lockdown was justified by saving lives and protecting the vulnerable they were actually killing with DNR orders and preventing empty hospitals being 'overrun'. In Britain the mantra of stay at home to 'save the NHS' was everywhere and across the world the same story was being sold when it was all lies. Two California doctors, Dan Erickson and Artin Massihi at Accelerated Urgent Care in Bakersfield, held a news conference in April, 2020, to say that intensive care units in California were 'empty, essentially', with hospitals shutting floors, not treating patients and laying off doctors. The California health system was working at minimum capacity 'getting rid of doctors because we just don't have the volume'. They said that people with conditions such as heart disease and cancer were not coming to hospital out of fear of 'Covid-19'. Their video was deleted by Susan Wojcicki's Cult-owned YouTube after reaching five million views. Florida governor Ron Desantis, who rejected the severe lockdowns of other states and is being targeted for doing so, said that in March, 2020, every US governor was given models claiming they would run out of hospital beds in days. That was never going to happen and the 'modellers' knew it. Deceit can be found at every level of the system. Urgent children's operations were cancelled including fracture repairs and biopsies to spot cancer. Eric Nicholls, a consultant paediatrician, said 'this is obviously concerning and we need to return to normal operating and to increase capacity as soon as possible'. Psychopaths

in power were rather less concerned *because* they are psychopaths. Deletion of urgent care and diagnosis has been happening all over the world and how many kids and others have died as a result of the actions of these cold and heartless lunatics dictating 'health' policy? The number must be stratospheric. Richard Sullivan, professor of cancer and global health at King's College London, said people feared 'Covid' more than cancer such was the campaign of fear. 'Years of lost life will be quite dramatic', Sullivan said, with 'a huge amount of avoidable mortality'. Sarah Woolnough, executive director for policy at Cancer Research UK, said there had been a 75 percent drop in urgent referrals to hospitals by family doctors of people with suspected cancer. Sullivan said that 'a lot of services have had to scale back – we've seen a dramatic decrease in the amount of elective cancer surgery'. Lockdown deaths worldwide has been absolutely fantastic with the *New York Post* reporting how data confirmed that 'lockdowns end more lives than they save':

There was a sharp decline in visits to emergency rooms and an increase in fatal heart attacks because patients didn't receive prompt treatment. Many fewer people were screened for cancer. Social isolation contributed to excess deaths from dementia and Alzheimer's.

Researchers predicted that the social and economic upheaval would lead to tens of thousands of "deaths of despair" from drug overdoses, alcoholism and suicide. As unemployment surged and mental-health and substance-abuse treatment programs were interrupted, the reported levels of anxiety, depression and suicidal thoughts increased dramatically, as did alcohol sales and fatal drug overdoses.

This has been happening while nurses and other staff had so much time on their hands in the 'war-zones' that Tic-Tok dancing videos began appearing across the Internet with medical staff dancing around in empty wards and corridors as people died at home from causes that would normally have been treated in hospital.

Mentions in dispatches

One brave and truth-committed whistleblower was Louise Hampton, a call handler with the UK NHS who made a viral Internet video saying she had done 'fuck all' during the 'pandemic'

which was 'a load of bollocks'. She said that 'Covid-19' was rebranded flu and of course she lost her job. This is what happens in the medical and endless other professions now when you tell the truth. Louise filmed inside 'war-zone' accident and emergency departments to show they were empty and I mean *empty* as in no one there. The mainstream media could have done the same and blown the gaff on the whole conspiracy. They haven't to their eternal shame. Not that most 'journalists' seem capable of manifesting shame as with the psychopaths they slavishly repeat without question. The relative few who were admitted with serious health problems were left to die alone with no loved ones allowed to see them because of 'Covid' rules and they included kids dying without the comfort of mum and dad at their bedside while the evil behind this couldn't give a damn. It was all good fun to them. A Scottish NHS staff nurse publicly quit in the spring of 2021 saying: 'I can no longer be part of the lies and the corruption by the government.' She said hospitals 'aren't full, the beds aren't full, beds have been shut, wards have been shut'. Hospitals were never busy throughout 'Covid'. The staff nurse said that Nicola Sturgeon, tragically the leader of the Scottish government, was on television saying save the hospitals and the NHS – 'but the beds are empty' and 'we've not seen flu, we always see flu every year'. She wrote to government and spoke with her union Unison (the unions are Cult-compromised and *useless*, but nothing changed. Many of her colleagues were scared of losing their jobs if they spoke out as they wanted to. She said nursing staff were being affected by wearing masks all day and 'my head is splitting every shift from wearing a mask'. The NHS is part of the fascist tyranny and must be dismantled so we can start again with human beings in charge. (Ironically, hospitals were reported to be busier again when official 'Covid' cases *fell* in spring/summer of 2021 and many other conditions required treatment at the same time as *the fake vaccine rollout*.)

I will cover the 'Covid vaccine' scam in detail later, but it is another indicator of the sickening disregard for human life that I am highlighting here. The DNA-manipulating concoctions do not fulfil

the definition of a 'vaccine', have never been used on humans before and were given only emergency approval because trials were not completed and they continued using the unknowing public. The result was what a NHS senior nurse with responsibility for 'vaccine' procedure said was 'genocide'. She said the 'vaccines' were not 'vaccines'. They had not been shown to be safe and claims about their effectiveness by drug companies were 'poetic licence'. She described what was happening as a 'horrid act of human annihilation'. The nurse said that management had instigated a policy of not providing a Patient Information Leaflet (PIL) before people were 'vaccinated' even though health care professionals are supposed to do this according to protocol. Patients should also be told that they are taking part in an ongoing clinical trial. Her challenges to what is happening had seen her excluded from meetings and ridiculed in others. She said she was told to 'watch my step ... or I would find myself surplus to requirements'. The nurse, who spoke anonymously in fear of her career, said she asked her NHS manager why he/she was content with taking part in genocide against those having the 'vaccines'. The reply was that everyone had to play their part and to 'put up, shut up, and get it done'. Government was 'leaning heavily' on NHS management which was clearly leaning heavily on staff. This is how the global 'medical' hierarchy operates and it starts with the Cult and its World Health Organization.

She told the story of a doctor who had the Pfizer jab and when questioned had no idea what was in it. The doctor had never read the literature. We have to stop treating doctors as intellectual giants when so many are moral and medical pygmies. The doctor did not even know that the 'vaccines' were not fully approved or that their trials were ongoing. They were, however, asking their patients if they minded taking part in follow-ups for research purposes – yes, the *ongoing clinical trial*. The nurse said the doctor's ignorance was not rare and she had spoken to a hospital consultant who had the jab without any idea of the background or that the 'trials' had not been completed. Nurses and pharmacists had shown the same ignorance.

‘My NHS colleagues have forsaken their duty of care, broken their code of conduct – Hippocratic Oath – and have been brainwashed just the same as the majority of the UK public through propaganda ...’ She said she had not been able to recruit a single NHS colleague, doctor, nurse or pharmacist to stand with her and speak out. Her union had refused to help. She said that if the genocide came to light she would not hesitate to give evidence at a Nuremberg-type trial against those in power who could have affected the outcomes but didn’t.

And all for what?

To put the nonsense into perspective let’s say the ‘virus’ does exist and let’s go completely crazy and accept that the official manipulated figures for cases and deaths are accurate. *Even then* a study by Stanford University epidemiologist Dr John Ioannidis published on the World Health Organization website produced an average infection to fatality rate of ... *0.23 percent!* Ioannidis said: ‘If one could sample equally from all locations globally, the median infection fatality rate might even be substantially lower than the 0.23% observed in my analysis.’ For healthy people under 70 it was ... *0.05 percent!* This compares with the 3.4 percent claimed by the Cult-owned World Health Organization when the hoax was first played and maximum fear needed to be generated. An updated Stanford study in April, 2021, put the ‘infection’ to ‘fatality’ rate at just 0.15 percent. Another team of scientists led by Megan O’Driscoll and Henrik Salje studied data from 45 countries and published their findings on the Nature website. For children and young people the figure is so small it virtually does not register although authorities will be hyping dangers to the young when they introduce DNA-manipulating ‘vaccines’ for children. The O’Driscoll study produced an average infection-fatality figure of 0.003 for children from birth to four; 0.001 for 5 to 14; 0.003 for 15 to 19; and it was still only 0.456 up to 64. To claim that children must be ‘vaccinated’ to protect them from ‘Covid’ is an obvious lie and so there must be another reason and there is. What’s more the average age of a ‘Covid’ death is akin

to the average age that people die in general. The average age of death in England is about 80 for men and 83 for women. The average age of death from alleged 'Covid' is between 82 and 83. California doctors, Dan Erickson and Artin Massihi, said at their April media conference that projection models of millions of deaths had been 'woefully inaccurate'. They produced detailed figures showing that Californians had a 0.03 chance of dying from 'Covid' based on the number of people who tested positive (with a test not testing for the 'virus'). Erickson said there was a 0.1 percent chance of dying from 'Covid' in the *state* of New York, not just the city, and a 0.05 percent chance in Spain, a centre of 'Covid-19' hysteria at one stage. The Stanford studies supported the doctors' data with fatality rate estimates of 0.23 and 0.15 percent. How close are these figures to my estimate of *zero*? Death-rate figures claimed by the World Health Organization at the start of the hoax were some 15 times higher. The California doctors said there was no justification for lockdowns and the economic devastation they caused. Everything they had ever learned about quarantine was that you quarantine the *sick* and not the healthy. They had never seen this before and it made no medical sense.

Why in the in the light of all this would governments and medical systems the world over say that billions must go under house arrest; lose their livelihood; in many cases lose their mind, their health and their life; force people to wear masks dangerous to health and psychology; make human interaction and even family interaction a criminal offence; ban travel; close restaurants, bars, watching live sport, concerts, theatre, and any activity involving human togetherness and discourse; and closing schools to isolate children from their friends and cause many to commit suicide in acts of hopelessness and despair? The California doctors said lockdown consequences included increased child abuse, partner abuse, alcoholism, depression, and other impacts they were seeing every day. Who would do that to the entire human race if not mentally-ill psychopaths of almost unimaginable extremes like Bill Gates? We must face the reality of what we are dealing with and come out of

denial. Fascism and tyranny are made possible only by the target population submitting and acquiescing to fascism and tyranny. The whole of human history shows that to be true. Most people naively and unquestioning believed what they were told about a 'deadly virus' and meekly and weakly submitted to house arrest. Those who didn't believe it – at least in total – still submitted in fear of the consequences of not doing so. For the rest who wouldn't submit draconian fines have been imposed, brutal policing by psychopaths *for* psychopaths, and condemnation from the meek and weak who condemn the Pushbackers on behalf of the very force that has them, too, in its gunsights. 'Pathetic' does not even begin to suffice. Britain's brainless 'Health' Secretary Matt Hancock warned anyone lying to border officials about returning from a list of 'hotspot' countries could face a jail sentence of up to ten years which is more than for racially-aggravated assault, incest and attempting to have sex with a child under 13. Hancock is a lunatic, but he has the state apparatus behind him in a Cult-led chain reaction and the same with UK 'Vaccine Minister' Nadhim Zahawi, a prominent member of the mega-Cult secret society, Le Cercle, which featured in my earlier books. The Cult enforces its will on governments and medical systems; government and medical systems enforce their will on business and police; business enforces its will on staff who enforce it on customers; police enforce the will of the Cult on the population and play their essential part in creating a world of fascist control that their own children and grandchildren will have to live in their entire lives. It is a hierarchical pyramid of imposition and acquiescence and, yes indeed, of clinical insanity.

Does anyone bright enough to read this book have to ask what the answer is? I think not, but I will reveal it anyway in the fewest of syllables: Tell the psychos and their moronic lackeys to fuck off and let's get on with our lives. We are many – They are few.

CHAPTER SEVEN

War on your mind

One believes things because one has been conditioned to believe them

Aldous Huxley, Brave New World

I have described the 'Covid' hoax as a 'Psyop' and that is true in every sense and on every level in accordance with the definition of that term which is psychological warfare. Break down the 'Covid pandemic' to the foundation themes and it is psychological warfare on the human individual and collective mind.

The same can be said for the entire human belief system involving every subject you can imagine. Huxley was right in his contention that people believe what they are conditioned to believe and this comes from the repetition throughout their lives of the same falsehoods. They spew from government, corporations, media and endless streams of 'experts' telling you what the Cult wants you to believe and often believing it themselves (although *far* from always). 'Experts' are rewarded with 'prestigious' jobs and titles and as agents of perceptual programming with regular access to the media. The Cult has to control the narrative – control *information* – or they lose control of the vital, crucial, without-which-they-cannot-prevail public perception of reality. The foundation of that control today is the Internet made possible by the Defense Advanced Research Projects Agency (DARPA), the incredibly sinister technological arm of the Pentagon. The Internet is the result of military technology.

DARPA openly brags about establishing the Internet which has been a long-term project to lasso the minds of the global population. I have said for decades the plan is to control information to such an extreme that eventually no one would see or hear anything that the Cult does not approve. We are closing in on that end with ferocious censorship since the 'Covid' hoax began and in my case it started back in the 1990s in terms of books and speaking venues. I had to create my own publishing company in 1995 precisely because no one else would publish my books even then. I think they're all still running.

Cult Internet

To secure total control of information they needed the Internet in which pre-programmed algorithms can seek out 'unclean' content for deletion and even stop it being posted in the first place. The Cult had to dismantle print and non-Internet broadcast media to ensure the transfer of information to the appropriate-named 'Web' – a critical expression of the *Cult* web. We've seen the ever-quicken demise of traditional media and control of what is left by a tiny number of corporations operating worldwide. Independent journalism in the mainstream is already dead and never was that more obvious than since the turn of 2020. The Cult wants all information communicated via the Internet to globally censor and allow the plug to be pulled any time. Lockdowns and forced isolation has meant that communication between people has been through electronic means and no longer through face-to-face discourse and discussion. Cult psychopaths have targeted the bars, restaurants, sport, venues and meeting places in general for this reason. None of this is by chance and it's to stop people gathering in any kind of privacy or number while being able to track and monitor all Internet communications and block them as necessary. Even private messages between individuals have been censored by these fascists that control Cult fronts like Facebook, Twitter, Google and YouTube which are all officially run by Sabbatian place-people and from the background by higher-level Sabbatian place people.

Facebook, Google, Amazon and their like were seed-funded and supported into existence with money-no-object infusions of funds either directly or indirectly from DARPA and CIA technology arm In-Q-Tel. The Cult plays the long game and prepares very carefully for big plays like 'Covid'. Amazon is another front in the psychological war and pretty much controls the global market in book sales and increasingly publishing. Amazon's limitless funds have deleted fantastic numbers of independent publishers to seize global domination on the way to deciding which books can be sold and circulated and which cannot. Moves in that direction are already happening. Amazon's leading light Jeff Bezos is the grandson of Lawrence Preston Gise who worked with DARPA predecessor ARPA. Amazon has big connections to the CIA and the Pentagon. The plan I have long described went like this:

1. Employ military technology to establish the Internet.
2. Sell the Internet as a place where people can freely communicate without censorship and allow that to happen until the Net becomes the central and irreversible pillar of human society. If the Internet had been highly censored from the start many would have rejected it.
3. Fund and manipulate major corporations into being to control the circulation of information on your Internet using cover stories about geeks in garages to explain how they came about. Give them unlimited funds to expand rapidly with no need to make a profit for years while non-Cult companies who need to balance the books cannot compete. You know that in these circumstances your Googles, YouTubes, Facebooks and Amazons are going to secure near monopolies by either crushing or buying up the opposition.
4. Allow freedom of expression on both the Internet and communication platforms to draw people in until the Internet is the central and irreversible pillar of human society and your communication corporations have reached a stage of near monopoly domination.
5. Then unleash your always-planned frenzy of censorship on the basis of 'where else are you going to go?' and continue to expand that until nothing remains that the Cult does not want its human targets to see.

The process was timed to hit the 'Covid' hoax to ensure the best chance possible of controlling the narrative which they knew they had to do at all costs. They were, after all, about to unleash a 'deadly virus' that didn't really exist. If you do that in an environment of free-flowing information and opinion you would be dead in the

water before you could say Gates is a psychopath. The network was in place through which the Cult-created-and-owned World Health Organization could dictate the 'Covid' narrative and response policy slavishly supported by Cult-owned Internet communication giants and mainstream media while those telling a different story were censored. Google, YouTube, Facebook and Twitter openly announced that they would do this. What else would we expect from Cult-owned operations like Facebook which former executives have confirmed set out to make the platform more addictive than cigarettes and coldly manipulates emotions of its users to sow division between people and groups and scramble the minds of the young? If Zuckerberg lives out the rest of his life without going to jail for crimes against humanity, and most emphatically against the young, it will be a travesty of justice. Still, no matter, cause and effect will catch up with him eventually and the same with Sergey Brin and Larry Page at Google with its CEO Sundar Pichai who fix the Google search results to promote Cult narratives and hide the opposition. Put the same key words into Google and other search engines like DuckDuckGo and you will see how different results can be. Wikipedia is another intensely biased 'encyclopaedia' which skews its content to the Cult agenda. YouTube links to Wikipedia's version of 'Covid' and 'climate change' on video pages in which experts in their field offer a different opinion (even that is increasingly rare with Wojcicki censorship). Into this 'Covid' silence-them network must be added government media censors, sorry 'regulators', such as Ofcom in the UK which imposed tyrannical restrictions on British broadcasters that had the effect of banning me from ever appearing. Just to debate with me about my evidence and views on 'Covid' would mean breaking the fascistic impositions of Ofcom and its CEO career government bureaucrat Melanie Dawes. Gutless British broadcasters tremble at the very thought of fascist Ofcom.

Psychos behind 'Covid'

The reason for the 'Covid' catastrophe in all its facets and forms can be seen by whom and what is driving the policies worldwide in such a coordinated way. Decisions are not being made to protect health, but to target psychology. The dominant group guiding and 'advising' government policy are not medical professionals. They are psychologists and behavioural scientists. Every major country has its own version of this phenomenon and I'll use the British example to show how it works. In many ways the British version has been affecting the wider world in the form of the huge behaviour manipulation network in the UK which operates in other countries. The network involves private companies, government, intelligence and military. The Cabinet Office is at the centre of the government 'Covid' Psyop and part-owns, with 'innovation charity' Nesta, the Behavioural Insights Team (BIT) which claims to be independent of government but patently isn't. The BIT was established in 2010 and its job is to manipulate the psyche of the population to acquiesce to government demands and so much more. It is also known as the 'Nudge Unit', a name inspired by the 2009 book by two ultra-Zionists, Cass Sunstein and Richard Thaler, called *Nudge: Improving Decisions About Health, Wealth, and Happiness*. The book, as with the Behavioural Insights Team, seeks to 'nudge' behaviour (manipulate it) to make the public follow patterns of action and perception that suit those in authority (the Cult). Sunstein is so skilled at this that he advises the World Health Organization and the UK Behavioural Insights Team and was Administrator of the White House Office of Information and Regulatory Affairs in the Obama administration. Biden appointed him to the Department of Homeland Security – another ultra-Zionist in the fold to oversee new immigration laws which is another policy the Cult wants to control. Sunstein is desperate to silence anyone exposing conspiracies and co-authored a 2008 report on the subject in which suggestions were offered to ban 'conspiracy theorizing' or impose 'some kind of tax, financial or otherwise, on those who disseminate such theories'. I guess a psychiatrist's chair is out of the question?

Sunstein's mate Richard Thaler, an 'academic affiliate' of the UK Behavioural Insights Team, is a proponent of 'behavioural economics' which is defined as the study of 'the effects of psychological, cognitive, emotional, cultural and social factors on the decisions of individuals and institutions'. Study the effects so they can be manipulated to be what you want them to be. Other leading names in the development of behavioural economics are ultra-Zionists Daniel Kahneman and Robert J. Shiller and they, with Thaler, won the Nobel Memorial Prize in Economic Sciences for their work in this field. The Behavioural Insights Team is operating at the heart of the UK government and has expanded globally through partnerships with several universities including Harvard, Oxford, Cambridge, University College London (UCL) and Pennsylvania. They claim to have 'trained' (reframed) 20,000 civil servants and run more than 750 projects involving 400 randomised controlled trials in dozens of countries' as another version of mind reframers Common Purpose. BIT works from its office in New York with cities and their agencies, as well as other partners, across the United States and Canada – this is a company part-owned by the British government Cabinet Office. An executive order by President Cult-servant Obama established a US Social and Behavioral Sciences Team in 2015. They all have the same reason for being and that's to brainwash the population directly and by brainwashing those in positions of authority.

'Covid' mind game

Another prime aspect of the UK mind-control network is the 'independent' [joke] Scientific Pandemic Insights Group on Behaviours (SPI-B) which 'provides behavioural science advice aimed at anticipating and helping people adhere to interventions that are recommended by medical or epidemiological experts'. That means manipulating public perception and behaviour to do whatever government tells them to do. It's disgusting and if they really want the public to be 'safe' this lot should all be under lock and key. According to the government website SPI-B consists of

'behavioural scientists, health and social psychologists, anthropologists and historians' and advises the Whitty-Vallance-led Scientific Advisory Group for Emergencies (SAGE) which in turn advises the government on 'the science' (it doesn't) and 'Covid' policy. When politicians say they are being guided by 'the science' this is the rabble in each country they are talking about and that 'science' is dominated by behaviour manipulators to enforce government fascism through public compliance. The Behaviour Insight Team is headed by psychologist David Solomon Halpern, a visiting professor at King's College London, and connects with a national and global web of other civilian and military organisations as the Cult moves towards its goal of fusing them into one fascistic whole in every country through its 'Fusion Doctrine'. The behaviour manipulation network involves, but is not confined to, the Foreign Office; National Security Council; government communications headquarters (GCHQ); MI5; MI6; the Cabinet Office-based Media Monitoring Unit; and the Rapid Response Unit which 'monitors digital trends to spot emerging issues; including misinformation and disinformation; and identifies the best way to respond'.

There is also the 77th Brigade of the UK military which operates like the notorious Israeli military's Unit 8200 in manipulating information and discussion on the Internet by posing as members of the public to promote the narrative and discredit those who challenge it. Here we have the military seeking to manipulate *domestic* public opinion while the Nazis in government are fine with that. Conservative Member of Parliament Tobias Ellwood, an advocate of lockdown and control through 'vaccine passports', is a Lieutenant Colonel reservist in the 77th Brigade which connects with the military operation jHub, the 'innovation centre' for the Ministry of Defence and Strategic Command. jHub has also been involved with the civilian National Health Service (NHS) in 'symptom tracing' the population. The NHS is a key part of this mind control network and produced a document in December, 2020, explaining to staff how to use psychological manipulation with different groups and ages to get them to have the DNA-manipulating 'Covid vaccine'

that's designed to cumulatively rewrite human genetics. The document, called 'Optimising Vaccination Roll Out – Do's and Dont's for all messaging, documents and "communications" in the widest sense', was published by NHS England and the NHS Improvement *Behaviour Change Unit* in partnership with Public Health England and Warwick Business School. I hear the mantra about 'save the NHS' and 'protect the NHS' when we need to scrap the NHS and start again. The current version is far too corrupt, far too anti-human and totally compromised by Cult operatives and their assets. UK government broadcast media censor Ofcom will connect into this web – as will the BBC with its tremendous Ofcom influence – to control what the public see and hear and dictate mass perception. Nuremberg trials must include personnel from all these organisations.

The fear factor

The 'Covid' hoax has led to the creation of the UK Cabinet Office-connected Joint Biosecurity Centre (JBC) which is officially described as providing 'expert advice on pandemics' using its independent [all Cult operations are 'independent'] analytical function to provide real-time analysis about infection outbreaks to identify and respond to outbreaks of Covid-19'. Another role is to advise the government on a response to spikes in infections – 'for example by closing schools or workplaces in local areas where infection levels have risen'. Put another way, promoting the Cult agenda. The Joint Biosecurity Centre is modelled on the Joint Terrorism Analysis Centre which analyses intelligence to set 'terrorism threat levels' and here again you see the fusion of civilian and military operations and intelligence that has led to military intelligence producing documents about 'vaccine hesitancy' and how it can be combated. Domestic civilian matters and opinions should not be the business of the military. The Joint Biosecurity Centre is headed by Tom Hurd, director general of the Office for Security and Counter-Terrorism from the establishment-to-its-fingertips Hurd family. His father is former Foreign Secretary Douglas Hurd. How coincidental that Tom

Hurd went to the elite Eton College and Oxford University with Boris Johnson. Imperial College with its ridiculous computer modeller Neil Ferguson will connect with this gigantic web that will itself interconnect with similar set-ups in other major and not so major countries. Compared with this Cult network the politicians, be they Boris Johnson, Donald Trump or Joe Biden, are bit-part players 'following the science'. The network of psychologists was on the 'Covid' case from the start with the aim of generating maximum fear of the 'virus' to ensure compliance by the population. A government behavioural science group known as SPI-B produced a paper in March, 2020, for discussion by the main government science advisory group known as SAGE. It was headed 'Options for increasing adherence to social distancing measures' and it said the following in a section headed 'Persuasion':

- A substantial number of people still do not feel sufficiently personally threatened; it could be that they are reassured by the low death rate in their demographic group, although levels of concern may be rising. Having a good understanding of the risk has been found to be positively associated with adoption of COVID-19 social distancing measures in Hong Kong.
- The perceived level of personal threat needs to be increased among those who are complacent, using hard-hitting evaluation of options for increasing social distancing emotional messaging. To be effective this must also empower people by making clear the actions they can take to reduce the threat.
- Responsibility to others: There seems to be insufficient understanding of, or feelings of responsibility about, people's role in transmitting the infection to others ... Messaging about actions need to be framed positively in terms of protecting oneself and the community, and increase confidence that they will be effective.
- Some people will be more persuaded by appeals to play by the rules, some by duty to the community, and some to personal risk.

All these different approaches are needed. The messaging also needs to take account of the realities of different people's lives. Messaging needs to take account of the different motivational levers and circumstances of different people.

All this could be achieved the SPI-B psychologists said by *using the media to increase the sense of personal threat* which translates as terrify the shit out of the population, including children, so they all do what we want. That's not happened has it? Those excuses for 'journalists' who wouldn't know journalism if it bit them on the arse (the great majority) have played their crucial part in serving this Cult-government Psyop to enslave their own kids and grandkids. How they live with themselves I have no idea. The psychological war has been underpinned by constant government 'Covid' propaganda in almost every television and radio ad break, plus the Internet and print media, which has pounded out the fear with taxpayers footing the bill for their own programming. The result has been people terrified of a 'virus' that doesn't exist or one with a tiny fatality rate even if you believe it does. People walk down the street and around the shops wearing face-nappies damaging their health and psychology while others report those who refuse to be that naïve to the police who turn up in their own face-nappies. I had a cameraman come to my flat and he was so frightened of 'Covid' he came in wearing a mask and refused to shake my hand in case he caught something. He had – naïveitis – and the thought that he worked in the mainstream media was both depressing and made his behaviour perfectly explainable. The fear which has gripped the minds of so many and frozen them into compliance has been carefully cultivated by these psychologists who are really psychopaths. If lives get destroyed and a lot of young people commit suicide it shows our plan is working. SPI-B then turned to compulsion on the public to comply. 'With adequate preparation, rapid change can be achieved', it said. Some countries had introduced mandatory self-isolation on a wide scale without evidence of major public unrest and a large majority of the UK's population appeared to be supportive of more coercive measures with 64 percent of adults saying they would

support putting London under a lockdown (watch the 'polls' which are designed to make people believe that public opinion is in favour or against whatever the subject in hand).

For 'aggressive protective measures' to be effective, the SPI-B paper said, special attention should be devoted to those population groups that are more at risk. Translated from the Orwellian this means making the rest of population feel guilty for not protecting the 'vulnerable' such as old people which the Cult and its agencies were about to kill on an industrial scale with lockdown, lack of treatment and the Gates 'vaccine'. Psychopath psychologists sold their guilt-trip so comprehensively that Los Angeles County Supervisor Hilda Solis reported that children were apologising (from a distance) to their parents and grandparents for bringing 'Covid' into their homes and getting them sick. '... These apologies are just some of the last words that loved ones will ever hear as they die alone,' she said. Gut-wrenchingly Solis then used this childhood tragedy to tell children to stay at home and 'keep your loved ones alive'. Imagine heaping such potentially life-long guilt on a kid when it has absolutely nothing to do with them. These people are deeply disturbed and the psychologists behind this even more so.

Uncivil war – divide and rule

Professional mind-controllers at SPI-B wanted the media to increase a sense of responsibility to others (do as you're told) and promote 'positive messaging' for those actions while in contrast to invoke 'social disapproval' by the unquestioning, obedient, community of anyone with a mind of their own. Again the compliant Goebbels-like media obliged. This is an old, old, trick employed by tyrannies the world over throughout human history. You get the target population to keep the target population in line – *your* line. SPI-B said this could 'play an important role in preventing anti-social behaviour or discouraging failure to enact pro-social behaviour'. For 'anti-social' in the Orwellian parlance of SPI-B see any behaviour that government doesn't approve. SPI-B recommendations said that 'social disapproval' should be accompanied by clear messaging and

promotion of strong collective identity – hence the government and celebrity mantra of ‘we’re all in this together’. Sure we are. The mind doctors have such contempt for their targets that they think some clueless comedian, actor or singer telling them to do what the government wants will be enough to win them over. We have had UK comedian Lenny Henry, actor Michael Caine and singer Elton John wheeled out to serve the propagandists by urging people to have the DNA-manipulating ‘Covid’ non-‘vaccine’. The role of Henry and fellow black celebrities in seeking to coax a ‘vaccine’ reluctant black community into doing the government’s will was especially stomach-turning. An emotion-manipulating script and carefully edited video featuring these black ‘celebs’ was such an insult to the intelligence of black people and where’s the self-respect of those involved selling their souls to a fascist government agenda? Henry said he heard black people’s ‘legitimate worries and concerns’, but people must ‘trust the facts’ when they were doing exactly that by not having the ‘vaccine’. They had to include the obligatory reference to Black Lives Matter with the line ... ‘Don’t let coronavirus cost even more black lives – because we matter’. My god, it was pathetic. ‘I know the vaccine is safe and what it does.’ How? ‘I’m a comedian and it says so in my script.’

SPI-B said social disapproval needed to be carefully managed to avoid victimisation, scapegoating and misdirected criticism, but they knew that their ‘recommendations’ would lead to exactly that and the media were specifically used to stir-up the divide-and-conquer hostility. Those who conform like good little baa, baas, are praised while those who have seen through the tidal wave of lies are ‘Covidiot’. The awake have been abused by the fast asleep for not conforming to fascism and impositions that the awake know are designed to endanger their health, dehumanise them, and tear asunder the very fabric of human society. We have had the curtain-twitchers and morons reporting neighbours and others to the face-napped police for breaking ‘Covid rules’ with fascist police delighting in posting links and phone numbers where this could be done. The Cult cannot impose its will without a compliant police

and military or a compliant population willing to play their part in enslaving themselves and their kids. The words of a pastor in Nazi Germany are so appropriate today:

First they came for the socialists and I did not speak out because I was not a socialist.

Then they came for the trade unionists and I did not speak out because I was not a trade unionist.

Then they came for the Jews and I did not speak out because I was not a Jew.

Then they came for me and there was no one left to speak for me.

Those who don't learn from history are destined to repeat it and so many are.

'Covid' rules: Rewiring the mind

With the background laid out to this gigantic national and global web of psychological manipulation we can put 'Covid' rules into a clear and sinister perspective. Forget the claims about protecting health. 'Covid' rules are about dismantling the human mind, breaking the human spirit, destroying self-respect, and then putting Humpty Dumpty together again as a servile, submissive slave. Social isolation through lockdown and distancing have devastating effects on the human psyche as the psychological psychopaths well know and that's the real reason for them. Humans need contact with each other, discourse, closeness and touch, or they eventually, and literally, go crazy. Masks, which I will address at some length, fundamentally add to the effects of isolation and the Cult agenda to dehumanise and de-individualise the population. To do this while knowing – in fact *seeking* – this outcome is the very epitome of evil and psychologists involved in this *are* the epitome of evil. They must like all the rest of the Cult demons and their assets stand trial for crimes against humanity on a scale that defies the imagination. Psychopaths in uniform use isolation to break enemy troops and agents and make them subservient and submissive to tell what they know. The technique is rightly considered a form of torture and

torture is most certainly what has been imposed on the human population.

Clinically-insane American psychologist Harry Harlow became famous for his isolation experiments in the 1950s in which he separated baby monkeys from their mothers and imprisoned them for months on end in a metal container or 'pit of despair'. They soon began to show mental distress and depression as any idiot could have predicted. Harlow put other monkeys in steel chambers for three, six or twelve months while denying them any contact with animals or humans. He said that the effects of total social isolation for six months were 'so devastating and debilitating that we had assumed initially that twelve months of isolation would not produce any additional decrement'; but twelve months of isolation 'almost obliterated the animals socially'. This is what the Cult and its psychopaths are doing to you and your children. Even monkeys in partial isolation in which they were not allowed to form relationships with other monkeys became 'aggressive and hostile, not only to others, but also towards their own bodies'. We have seen this in the young as a consequence of lockdown. UK government psychopaths launched a public relations campaign telling people not to hug each other even after they received the 'Covid-19 vaccine' which we were told with more lies would allow a return to 'normal life'. A government source told *The Telegraph*: 'It will be along the lines that it is great that you have been vaccinated, but if you are going to visit your family and hug your grandchildren there is a chance you are going to infect people you love.' The source was apparently speaking from a secure psychiatric facility. Janet Lord, director of Birmingham University's Institute of Inflammation and Ageing, said that parents and grandparents should avoid hugging their children. Well, how can I put it, Ms Lord? Fuck off. Yep, that'll do.

Destroying the kids – where are the parents?

Observe what has happened to people enslaved and isolated by lockdown as suicide and self-harm has soared worldwide,

particularly among the young denied the freedom to associate with their friends. A study of 49,000 people in English-speaking countries concluded that almost half of young adults are at clinical risk of mental health disorders. A national survey in America of 1,000 currently enrolled high school and college students found that 5 percent reported attempting suicide during the pandemic. Data from the US CDC's National Syndromic Surveillance Program from January 1st to October 17th, 2020, revealed a *31 percent* increase in mental health issues among adolescents aged 12 to 17 compared with 2019. The CDC reported that America in general suffered the biggest drop in life expectancy since World War Two as it fell by a year in the first half of 2020 as a result of 'deaths of despair' – overdoses and suicides. Deaths of despair have leapt by more than 20 percent during lockdown and include the highest number of fatal overdoses ever recorded in a single year – 81,000. Internet addiction is another consequence of being isolated at home which lowers interest in physical activities as kids fall into inertia and what's the point? Children and young people are losing hope and giving up on life, sometimes literally. A 14-year-old boy killed himself in Maryland because he had 'given up' when his school district didn't reopen; an 11-year-old boy shot himself during a zoom class; a teenager in Maine succumbed to the isolation of the 'pandemic' when he ended his life after experiencing a disrupted senior year at school. Children as young as nine have taken their life and all these stories can be repeated around the world. Careers are being destroyed before they start and that includes those in sport in which promising youngsters have not been able to take part. The plan of the psycho-psychologists is working all right. Researchers at Cambridge University found that lockdowns cause significant harm to children's mental health. Their study was published in the *Archives of Disease in Childhood*, and followed 168 children aged between 7 and 11. The researchers concluded:

During the UK lockdown, children's depression symptoms have increased substantially, relative to before lockdown. The scale of this effect has direct relevance for the continuation of different elements of lockdown policy, such as complete or partial school closures ...

... Specifically, we observed a statistically significant increase in ratings of depression, with a medium-to-large effect size. Our findings emphasise the need to incorporate the potential impact of lockdown on child mental health in planning the ongoing response to the global pandemic and the recovery from it.

Not a chance when the Cult's psycho-psychologists were getting exactly what they wanted. The UK's Royal College of Paediatrics and Child Health has urged parents to look for signs of eating disorders in children and young people after a three to four fold increase. Specialists say the 'pandemic' is a major reason behind the rise. You don't say. The College said isolation from friends during school closures, exam cancellations, loss of extra-curricular activities like sport, and an increased use of social media were all contributory factors along with fears about the virus (psycho-psychologists again), family finances, and students being forced to quarantine. Doctors said young people were becoming severely ill by the time they were seen with 'Covid' regulations reducing face-to-face consultations. Nor is it only the young that have been devastated by the psychopaths. Like all bullies and cowards the Cult is targeting the young, elderly, weak and infirm. A typical story was told by a British lady called Lynn Parker who was not allowed to visit her husband in 2020 for the last ten and half months of his life 'when he needed me most' between March 20th and when he died on December 19th. This vacates the criminal and enters the territory of evil. The emotional impact on the immune system alone is immense as are the number of people of all ages worldwide who have died as a result of Cult-demanded, Gates-demanded, lockdowns.

Isolation is torture

The experience of imposing solitary confinement on millions of prisoners around the world has shown how a large percentage become 'actively psychotic and/or acutely suicidal'. Social isolation has been found to trigger 'a specific psychiatric syndrome, characterized by hallucinations; panic attacks; overt paranoia; diminished impulse control; hypersensitivity to external stimuli; and difficulties with thinking, concentration and memory'. Juan Mendez,

a United Nations rapporteur (investigator), said that isolation is a form of torture. Research has shown that even after isolation prisoners find it far more difficult to make social connections and I remember chatting to a shop assistant after one lockdown who told me that when her young son met another child again he had no idea how to act or what to do. Hannah Flanagan, Director of Emergency Services at Journey Mental Health Center in Dane County, Wisconsin, said: 'The specificity about Covid social distancing and isolation that we've come across as contributing factors to the suicides are really new to us this year.' But they are not new to those that devised them. They are getting the effect they want as the population is psychologically dismantled to be rebuilt in a totally different way. Children and the young are particularly targeted. They will be the adults when the full-on fascist AI-controlled technocracy is planned to be imposed and they are being prepared to meekly submit. At the same time older people who still have a memory of what life was like before – and how fascist the new normal really is – are being deleted. You are going to see efforts to turn the young against the old to support this geriatric genocide. Hannah Flanagan said the big increase in suicide in her county proved that social isolation is not only harmful, but deadly. Studies have shown that isolation from others is one of the main risk factors in suicide and even more so with women. Warnings that lockdown could create a 'perfect storm' for suicide were ignored. After all this was one of the *reasons* for lockdown. Suicide, however, is only the most extreme of isolation consequences. There are many others. Dr Dhruv Khullar, assistant professor of healthcare policy at Weill Cornell Medical College, said in a *New York Times* article in 2016 long before the fake 'pandemic':

A wave of new research suggests social separation is bad for us. Individuals with less social connection have disrupted sleep patterns, altered immune systems, more inflammation and higher levels of stress hormones. One recent study found that isolation increases the risk of heart disease by 29 percent and stroke by 32 percent. Another analysis that pooled data from 70 studies and 3.4 million people found that socially isolated individuals had a 30 percent higher risk of dying in the next seven years, and that this effect was largest in middle age.

Loneliness can accelerate cognitive decline in older adults, and isolated individuals are twice as likely to die prematurely as those with more robust social interactions. These effects start early: Socially isolated children have significantly poorer health 20 years later, even after controlling for other factors. All told, loneliness is as important a risk factor for early death as obesity and smoking.

There you have proof from that one article alone four years before 2020 that those who have enforced lockdown, social distancing and isolation knew what the effect would be and that is even more so with professional psychologists that have been driving the policy across the globe. We can go back even further to the years 2000 and 2003 and the start of a major study on the effects of isolation on health by Dr Janine Gronewold and Professor Dirk M. Hermann at the University Hospital in Essen, Germany, who analysed data on 4,316 people with an average age of 59 who were recruited for the long-term research project. They found that socially isolated people are more than 40 percent more likely to have a heart attack, stroke, or other major cardiovascular event and nearly 50 percent more likely to die from any cause. Given the financial Armageddon unleashed by lockdown we should note that the study found a relationship between increased cardiovascular risk and lack of financial support. After excluding other factors social isolation was still connected to a 44 percent increased risk of cardiovascular problems and a 47 percent increased risk of death by any cause. Lack of financial support was associated with a 30 percent increase in the risk of cardiovascular health events. Dr Gronewold said it had been known for some time that feeling lonely or lacking contact with close friends and family can have an impact on physical health and the study had shown that having strong social relationships is of high importance for heart health. Gronewold said they didn't understand yet why people who are socially isolated have such poor health outcomes, but this was obviously a worrying finding, particularly during these times of prolonged social distancing. Well, it can be explained on many levels. You only have to identify the point in the body where people feel loneliness and missing people they are parted from – it's in the centre of the chest where they feel the ache of loneliness and the ache of missing people. 'My heart aches for

you' ... 'My heart aches for some company.' I will explain this more in the chapter Escaping Wetiko, but when you realise that the body is the mind – they are expressions of each other – the reason why state of the mind dictates state of the body becomes clear.

American psychologist Ranjit Powar was highlighting the effects of lockdown isolation as early as April, 2020. She said humans have evolved to be social creatures and are wired to live in interactive groups. Being isolated from family, friends and colleagues could be unbalancing and traumatic for most people and could result in short or even long-term psychological and physical health problems. An increase in levels of anxiety, aggression, depression, forgetfulness and hallucinations were possible psychological effects of isolation. 'Mental conditions may be precipitated for those with underlying pre-existing susceptibilities and show up in many others without any pre-condition.' Powar said personal relationships helped us cope with stress and if we lost this outlet for letting off steam the result can be a big emotional void which, for an average person, was difficult to deal with. 'Just a few days of isolation can cause increased levels of anxiety and depression' – so what the hell has been the effect on the global population of *18 months* of this at the time of writing? Powar said: 'Add to it the looming threat of a dreadful disease being repeatedly hammered in through the media and you have a recipe for many shades of mental and physical distress.' For those with a house and a garden it is easy to forget that billions have had to endure lockdown isolation in tiny overcrowded flats and apartments with nowhere to go outside. The psychological and physical consequences of this are unimaginable and with lunatic and abusive partners and parents the consequences have led to tremendous increases in domestic and child abuse and alcoholism as people seek to shut out the horror. Ranjit Powar said:

Staying in a confined space with family is not all a rosy picture for everyone. It can be extremely oppressive and claustrophobic for large low-income families huddled together in small single-room houses. Children here are not lucky enough to have many board/electronic games or books to keep them occupied.

Add to it the deep insecurity of running out of funds for food and basic necessities. On the other hand, there are people with dysfunctional family dynamics, such as domineering, abusive or alcoholic partners, siblings or parents which makes staying home a period of trial. Incidence of suicide and physical abuse against women has shown a worldwide increase. Heightened anxiety and depression also affect a person's immune system, making them more susceptible to illness.

To think that Powar's article was published on April 11th, 2020.

Six-feet fantasy

Social (unsocial) distancing demanded that people stay six feet or two metres apart. UK government advisor Robert Dingwall from the New and Emerging Respiratory Virus Threats Advisory Group said in a radio interview that the two-metre rule was 'conjured up out of nowhere' and was not based on science. No, it was not based on *medical* science, but it didn't come out of nowhere. The distance related to *psychological* science. Six feet/two metres was adopted in many countries and we were told by people like the criminal Anthony Fauci and his ilk that it was founded on science. Many schools could not reopen because they did not have the space for six-foot distancing. Then in March, 2021, after a year of six-foot 'science', a study published in the *Journal of Infectious Diseases* involving more than 500,000 students and almost 100,000 staff over 16 weeks revealed no significant difference in 'Covid' cases between six feet and three feet and Fauci changed his tune. Now three feet was okay. There is no difference between six feet and three *inches* when there is no 'virus' and they got away with six feet for psychological reasons for as long as they could. I hear journalists and others talk about 'unintended consequences' of lockdown. They are not *unintended* at all; they have been coldly-calculated for a specific outcome of human control and that's why super-psychopaths like Gates have called for them so vehemently. Super-psychopath psychologists have demanded them and psychopathic or clueless, spineless, politicians have gone along with them by 'following the science'. But it's not science at all. 'Science' is not what is; it's only what people can be manipulated to believe it is. The whole 'Covid' catastrophe is

founded on mind control. Three word or three statement mantras issued by the UK government are a well-known mind control technique and so we've had 'Stay home/protect the NHS/save lives', 'Stay alert/control the virus/save lives' and 'hands/face/space'. One of the most vocal proponents of extreme 'Covid' rules in the UK has been Professor Susan Michie, a member of the British Communist Party, who is not a medical professional. Michie is the director of the Centre for Behaviour Change at University College London. She is a *behavioural psychologist* and another filthy rich 'Marxist' who praised China's draconian lockdown. She was known by fellow students at Oxford University as 'Stalin's nanny' for her extreme Marxism. Michie is an influential member of the UK government's Scientific Advisory Group for Emergencies (SAGE) and behavioural manipulation groups which have dominated 'Covid' policy. She is a consultant adviser to the World Health Organization on 'Covid-19' and behaviour. Why the hell are lockdowns anything to do with her when they are claimed to be about health? Why does a behavioural psychologist from a group charged with changing the behaviour of the public want lockdown, human isolation and mandatory masks? Does that question really need an answer? Michie *absolutely* has to explain herself before a Nuremberg court when humanity takes back its world again and even more so when you see the consequences of masks that she demands are compulsory. This is a Michie classic:

The benefits of getting primary school children to wear masks is that regardless of what little degree of transmission is occurring in those age groups it could help normalise the practice. Young children wearing masks may be more likely to get their families to accept masks.

Those words alone should carry a prison sentence when you ponder on the callous disregard for children involved and what a statement it makes about the mind and motivations of Susan Michie. What a lovely lady and what she said there encapsulates the mentality of the psychopaths behind the 'Covid' horror. Let us compare what Michie said with a countrywide study in Germany published at [researchsquare.com](https://www.researchsquare.com) involving 25,000 school children and 17,854 health complaints submitted by parents. Researchers

found that masks are harming children physically, psychologically, and behaviourally with 24 health issues associated with mask wearing. They include: shortness of breath (29.7%); dizziness (26.4%); increased headaches (53%); difficulty concentrating (50%); drowsiness or fatigue (37%); and malaise (42%). Nearly a third of children experienced more sleep issues than before and a quarter developed new fears. Researchers found health issues and other impairments in 68 percent of masked children covering their faces for an average of 4.5 hours a day. Hundreds of those taking part experienced accelerated respiration, tightness in the chest, weakness, and short-term impairment of consciousness. A reminder of what Michie said again:

The benefits of getting primary school children to wear masks is that regardless of what little degree of transmission is occurring in those age groups it could help normalise the practice. Young children wearing masks may be more likely to get their families to accept masks.

Psychopaths in government and psychology now have children and young people – plus all the adults – wearing masks for hours on end while clueless teachers impose the will of the psychopaths on the young they should be protecting. What the hell are parents doing?

Cult lab rats

We have some schools already imposing on students microchipped buzzers that activate when they get 'too close' to their pals in the way they do with lab rats. How apt. To the Cult and its brain-dead servants our children *are* lab rats being conditioned to be unquestioning, dehumanised slaves for the rest of their lives.

Children and young people are being weaned and frightened away from the most natural human instincts including closeness and touch. I have tracked in the books over the years how schools were banning pupils from greeting each other with a hug and the whole Cult-induced Me Too movement has terrified men and boys from a relaxed and natural interaction with female friends and work colleagues to the point where many men try never to be in a room

alone with a woman that's not their partner. Airhead celebrities have as always played their virtue-signalling part in making this happen with their gross exaggeration. For every monster like Harvey Weinstein there are at least tens of thousands of men that don't treat women like that; but everyone must be branded the same and policy changed for them as well as the monster. I am going to be using the word 'dehumanise' many times in this chapter because that is what the Cult is seeking to do and it goes very deep as we shall see. Don't let them kid you that social distancing is planned to end one day. That's not the idea. We are seeing more governments and companies funding and producing wearable gadgets to keep people apart and they would not be doing that if this was meant to be short-term. A tech start-up company backed by GCHQ, the British Intelligence and military surveillance headquarters, has created a social distancing wrist sensor that alerts people when they get too close to others. The CIA has also supported tech companies developing similar devices. The wearable sensor was developed by Tended, one of a number of start-up companies supported by GCHQ (see the CIA and DARPA). The device can be worn on the wrist or as a tag on the waistband and will vibrate whenever someone wearing the device breaches social distancing and gets anywhere near natural human contact. The company had a lucky break in that it was developing a distancing sensor when the 'Covid' hoax arrived which immediately provided a potentially enormous market. How fortunate. The government in big-time Cult-controlled Ontario in Canada is investing \$2.5 million in wearable contact tracing technology that 'will alert users if they may have been exposed to the Covid-19 in the workplace and will beep or vibrate if they are within six feet of another person'. Facedrive Inc., the technology company behind this, was founded in 2016 with funding from the Ontario Together Fund and obviously they, too, had a prophet on the board of directors. The human surveillance and control technology is called TraceSCAN and would be worn by the human cyborgs in places such as airports, workplaces, construction sites, care homes and ... *schools*.

I emphasise schools with children and young people the prime targets. You know what is planned for society as a whole if you keep your eyes on the schools. They have always been places where the state program the next generation of slaves to be its compliant worker-ants – or Woker-ants these days; but in the mist of the ‘Covid’ madness they have been transformed into mind laboratories on a scale never seen before. Teachers and head teachers are just as programmed as the kids – often more so. Children are kept apart from human interaction by walk lanes, classroom distancing, staggered meal times, masks, and the rolling-out of buzzer systems. Schools are now physically laid out as a laboratory maze for lab-rats. Lunatics at a school in Anchorage, Alaska, who should be prosecuted for child abuse, took away desks and forced children to kneel (know your place) on a mat for five hours a day while wearing a mask and using their chairs as a desk. How this was supposed to impact on a ‘virus’ only these clinically insane people can tell you and even then it would be clap-trap. The school banned recess (interaction), art classes (creativity), and physical exercise (getting body and mind moving out of inertia). Everyone behind this outrage should be in jail or better still a mental institution. The behavioural manipulators are all for this dystopian approach to schools. Professor Susan Michie, the mind-doctor and British Communist Party member, said it was wrong to say that schools were safe. They had to be made so by ‘distancing’, masks and ventilation (sitting all day in the cold). I must ask this lady round for dinner on a night I know I am going to be out and not back for weeks. She probably wouldn’t be able to make it, anyway, with all the visits to her own psychologist she must have block-booked.

Masking identity

I know how shocking it must be for you that a behaviour manipulator like Michie wants everyone to wear masks which have long been a feature of mind-control programs like the infamous MKUltra in the United States, but, there we are. We live and learn. I spent many years from 1996 to right across the millennium

researching mind control in detail on both sides of the Atlantic and elsewhere. I met a large number of mind-control survivors and many had been held captive in body and mind by MKUltra. MK stands for mind-control, but employs the German spelling in deference to the Nazis spirited out of Germany at the end of World War Two by Operation Paperclip in which the US authorities, with help from the Vatican, transported Nazi mind-controllers and engineers to America to continue their work. Many of them were behind the creation of NASA and they included Nazi scientist and SS officer Wernher von Braun who swapped designing V-2 rockets to bombard London with designing the Saturn V rockets that powered the NASA moon programme's Apollo craft. I think I may have mentioned that the Cult has no borders. Among Paperclip escapees was Josef Mengele, the Angel of Death in the Nazi concentration camps where he conducted mind and genetic experiments on children often using twins to provide a control twin to measure the impact of his 'work' on the other. If you want to observe the Cult mentality in all its extremes of evil then look into the life of Mengele. I have met many people who suffered mercilessly under Mengele in the United States where he operated under the name Dr Greene and became a stalwart of MKUltra programming and torture. Among his locations was the underground facility in the Mojave Desert in California called the China Lake Naval Weapons Station which is almost entirely below the surface. My books *The Biggest Secret*, *Children of the Matrix* and *The Perception Deception* have the detailed background to MKUltra.

The best-known MKUltra survivor is American Cathy O'Brien. I first met her and her late partner Mark Phillips at a conference in Colorado in 1996. Mark helped her escape and deprogram from decades of captivity in an offshoot of MKUltra known as Project Monarch in which 'sex slaves' were provided for the rich and famous including Father George Bush, Dick Cheney and the Clintons. Read Cathy and Mark's book *Trance-Formation of America* and if you are new to this you will be shocked to the core. I read it in 1996 shortly before, with the usual synchronicity of my life, I found

myself given a book table at the conference right next to hers. MKUltra never ended despite being very publicly exposed (only a small part of it) in the 1970s and continues in other guises. I am still in touch with Cathy. She contacted me during 2020 after masks became compulsory in many countries to tell me how they were used as part of MKUltra programming. I had been observing 'Covid regulations' and the relationship between authority and public for months. I saw techniques that I knew were employed on individuals in MKUltra being used on the global population. I had read many books and manuals on mind control including one called *Silent Weapons for Quiet Wars* which came to light in the 1980s and was a guide on how to perceptually program on a mass scale. 'Silent Weapons' refers to mind-control. I remembered a line from the manual as governments, medical authorities and law enforcement agencies have so obviously talked to – or rather at – the adult population since the 'Covid' hoax began as if they are children. The document said:

If a person is spoken to by a T.V. advertiser as if he were a twelve-year-old, then, due to suggestibility, he will, with a certain probability, respond or react to that suggestion with the uncritical response of a twelve-year-old and will reach in to his economic reservoir and deliver its energy to buy that product on impulse when he passes it in the store.

That's why authority has spoken to adults like children since all this began.

Why did Michael Jackson wear masks?

Every aspect of the 'Covid' narrative has mind-control as its central theme. Cathy O'Brien wrote an article for davidicke.com about the connection between masks and mind control. Her daughter Kelly who I first met in the 1990s was born while Cathy was still held captive in MKUltra. Kelly was forced to wear a mask as part of her programming from the age of *two* to dehumanise her, target her sense of individuality and reduce the amount of oxygen her brain and body received. *Bingo*. This is the real reason for compulsory

masks, why they have been enforced en masse, and why they seek to increase the number they demand you wear. First one, then two, with one disgraceful alleged 'doctor' recommending four which is nothing less than a death sentence. Where and how often they must be worn is being expanded for the purpose of mass mind control and damaging respiratory health which they can call 'Covid-19'. Canada's government headed by the man-child Justin Trudeau, says it's fine for children of two and older to wear masks. An insane 'study' in Italy involving just 47 children concluded there was no problem for babies as young as *four months* wearing them. Even after people were 'vaccinated' they were still told to wear masks by the criminal that is Anthony Fauci. Cathy wrote that mandating masks is allowing the authorities literally to control the air we breathe which is what was done in MKUltra. You might recall how the singer Michael Jackson wore masks and there is a reason for that. He was subjected to MKUltra mind control through Project Monarch and his psyche was scrambled by these simpletons. Cathy wrote:

In MKUltra Project Monarch mind control, Michael Jackson had to wear a mask to silence his voice so he could not reach out for help. Remember how he developed that whisper voice when he wasn't singing? Masks control the mind from the outside in, like the redefining of words is doing. By controlling what we can and cannot say for fear of being labeled racist or beaten, for example, it ultimately controls thought that drives our words and ultimately actions (or lack thereof).

Likewise, a mask muffles our speech so that we are not heard, which controls voice ... words ... mind. This is Mind Control. Masks are an obvious mind control device, and I am disturbed so many people are complying on a global scale. Masks depersonalize while making a person feel as though they have no voice. It is a barrier to others. People who would never choose to comply but are forced to wear a mask in order to keep their job, and ultimately their family fed, are compromised. They often feel shame and are subdued. People have stopped talking with each other while media controls the narrative.

The 'no voice' theme has often become literal with train passengers told not to speak to each other in case they pass on the 'virus', singing banned for the same reason and bonkers California officials telling people riding roller coasters that they cannot shout and scream. Cathy said she heard every day from healed MKUltra survivors who cannot wear a mask without flashing back on ways

their breathing was controlled – ‘from ball gags and penises to water boarding’. She said that through the years when she saw images of people in China wearing masks ‘due to pollution’ that it was really to control their oxygen levels. ‘I knew it was as much of a population control mechanism of depersonalisation as are burkas’, she said. Masks are another Chinese communist/fascist method of control that has been swept across the West as the West becomes China at lightning speed since we entered 2020.

Mask-19

There are other reasons for mandatory masks and these include destroying respiratory health to call it ‘Covid-19’ and stunting brain development of children and the young. Dr Margarite Griesz-Brisson MD, PhD, is a Consultant Neurologist and Neurophysiologist and the Founder and Medical Director of the London Neurology and Pain Clinic. Her CV goes down the street and round the corner. She is clearly someone who cares about people and won’t parrot the propaganda. Griesz-Brisson has a PhD in pharmacology, with special interest in neurotoxicology, environmental medicine, neuroregeneration and neuroplasticity (the way the brain can change in the light of information received). She went public in October, 2020, with a passionate warning about the effects of mask-wearing laws:

The reinhalation of our exhaled air will without a doubt create oxygen deficiency and a flooding of carbon dioxide. We know that the human brain is very sensitive to oxygen deprivation. There are nerve cells for example in the hippocampus that can’t be longer than 3 minutes without oxygen – they cannot survive. The acute warning symptoms are headaches, drowsiness, dizziness, issues in concentration, slowing down of reaction time – reactions of the cognitive system.

Oh, I know, let’s tell bus, truck and taxi drivers to wear them and people working machinery. How about pilots, doctors and police? Griesz-Brisson makes the important point that while the symptoms she mentions may fade as the body readjusts this does not alter the fact that people continue to operate in oxygen deficit with long list of

potential consequences. She said it was well known that neurodegenerative diseases take years or decades to develop. 'If today you forget your phone number, the breakdown in your brain would have already started 20 or 30 years ago.' She said degenerative processes in your brain are getting amplified as your oxygen deprivation continues through wearing a mask. Nerve cells in the brain are unable to divide themselves normally in these circumstances and lost nerve cells will no longer be regenerated. 'What is gone is gone.' Now consider that people like shop workers and *schoolchildren* are wearing masks for hours every day. What in the name of sanity is going to be happening to them? 'I do not wear a mask, I need my brain to think', Griesz-Brisson said, 'I want to have a clear head when I deal with my patients and not be in a carbon dioxide-induced anaesthesia'. If you are told to wear a mask anywhere ask the organisation, police, store, whatever, for their risk assessment on the dangers and negative effects on mind and body of enforcing mask-wearing. They won't have one because it has never been done not even by government. All of them must be subject to class-action lawsuits as the consequences come to light. They don't do mask risk assessments for an obvious reason. They know what the conclusions would be and independent scientific studies that *have* been done tell a horror story of consequences.

'Masks are criminal'

Dr Griesz-Brisson said that for children and adolescents, masks are an absolute no-no. They had an extremely active and adaptive immune system and their brain was incredibly active with so much to learn. 'The child's brain, or the youth's brain, is thirsting for oxygen.' The more metabolically active an organ was, the more oxygen it required; and in children and adolescents every organ was metabolically active. Griesz-Brisson said that to deprive a child's or adolescent's brain of oxygen, or to restrict it in any way, was not only dangerous to their health, it was absolutely criminal. 'Oxygen deficiency inhibits the development of the brain, and the damage that has taken place as a result CANNOT be reversed.' Mind

manipulators of MKUltra put masks on two-year-olds they wanted to neurologically rewire and you can see why. Griesz-Brisson said a child needs the brain to learn and the brain needs oxygen to function. 'We don't need a clinical study for that. This is simple, indisputable physiology.' Consciously and purposely induced oxygen deficiency was an absolutely deliberate health hazard, and an absolute medical contraindication which means that 'this drug, this therapy, this method or measure should not be used, and is not allowed to be used'. To coerce an entire population to use an absolute medical contraindication by force, she said, there had to be definite and serious reasons and the reasons must be presented to competent interdisciplinary and independent bodies to be verified and authorised. She had this warning of the consequences that were coming if mask wearing continued:

When, in ten years, dementia is going to increase exponentially, and the younger generations couldn't reach their god-given potential, it won't help to say 'we didn't need the masks'. I know how damaging oxygen deprivation is for the brain, cardiologists know how damaging it is for the heart, pulmonologists know how damaging it is for the lungs. Oxygen deprivation damages every single organ. Where are our health departments, our health insurance, our medical associations? It would have been their duty to be vehemently against the lockdown and to stop it and stop it from the very beginning.

Why do the medical boards issue punishments to doctors who give people exemptions? Does the person or the doctor seriously have to prove that oxygen deprivation harms people? What kind of medicine are our doctors and medical associations representing? Who is responsible for this crime? The ones who want to enforce it? The ones who let it happen and play along, or the ones who don't prevent it?

All of the organisations and people she mentions there either answer directly to the Cult or do whatever hierarchical levels above them tell them to do. The outcome of both is the same. 'It's not about masks, it's not about viruses, it's certainly not about your health', Griesz-Brisson said. 'It is about much, much more. I am not participating. I am not afraid.' They were taking our air to breathe and there was no unfounded medical exemption from face masks. Oxygen deprivation was dangerous for every single brain. It had to be the free decision of every human being whether they want to

wear a mask that was absolutely ineffective to protect themselves from a virus. She ended by rightly identifying where the responsibility lies for all this:

The imperative of the hour is personal responsibility. We are responsible for what we think, not the media. We are responsible for what we do, not our superiors. We are responsible for our health, not the World Health Organization. And we are responsible for what happens in our country, not the government.

Halle-bloody-lujah.

But surgeons wear masks, right?

Independent studies of mask-wearing have produced a long list of reports detailing mental, emotional and physical dangers. What a definition of insanity to see police officers imposing mask-wearing on the public which will cumulatively damage their health while the police themselves wear masks that will cumulatively damage *their* health. It's utter madness and both public and police do this because 'the government says so' – yes a government of brain-donor idiots like UK Health Secretary Matt Hancock reading the 'follow the science' scripts of psychopathic, lunatic psychologists. The response you get from Stockholm syndrome sufferers defending the very authorities that are destroying them and their families is that 'surgeons wear masks'. This is considered the game, set and match that they must work and don't cause oxygen deficit. Well, actually, scientific studies have shown that they *do* and oxygen levels are monitored in operating theatres to compensate. Surgeons wear masks to stop spittle and such like dropping into open wounds – not to stop 'viral particles' which are so miniscule they can only be seen through an electron microscope. Holes in the masks are significantly bigger than 'viral particles' and if you sneeze or cough they will breach the mask. I watched an incredibly disingenuous 'experiment' that claimed to prove that masks work in catching 'virus' material from the mouth and nose. They did this with a slow motion camera and the mask did block big stuff which stayed inside the mask and

against the face to be breathed in or cause infections on the face as we have seen with many children. 'Viral particles', however, would never have been picked up by the camera as they came through the mask when they are far too small to be seen. The 'experiment' was therefore disingenuous *and* useless.

Studies have concluded that wearing masks in operating theatres (and thus elsewhere) make no difference to preventing infection while the opposite is true with toxic shite building up in the mask and this had led to an explosion in tooth decay and gum disease dubbed by dentists 'mask mouth'. You might have seen the Internet video of a furious American doctor urging people to take off their masks after a four-year-old patient had been rushed to hospital the night before and nearly died with a lung infection that doctors sourced to mask wearing. A study in the journal *Cancer Discovery* found that inhalation of harmful microbes can contribute to advanced stage lung cancer in adults and long-term use of masks can help breed dangerous pathogens. Microbiologists have said frequent mask wearing creates a moist environment in which microbes can grow and proliferate before entering the lungs. The Canadian Agency for Drugs and Technologies in Health, or CADTH, a Canadian national organisation that provides research and analysis to healthcare decision-makers, said this as long ago as 2013 in a report entitled 'Use of Surgical Masks in the Operating Room: A Review of the Clinical Effectiveness and Guidelines'. It said:

- No evidence was found to support the use of surgical face masks to reduce the frequency of surgical site infections
- No evidence was found on the effectiveness of wearing surgical face masks to protect staff from infectious material in the operating room.
- Guidelines recommend the use of surgical face masks by staff in the operating room to protect both operating room staff and patients (despite the lack of evidence).

We were told that the world could go back to 'normal' with the arrival of the 'vaccines'. When they came, fraudulent as they are, the story changed as I knew that it would. We are in the midst of transforming 'normal', not going back to it. Mary Ramsay, head of immunisation at Public Health England, echoed the words of US criminal Anthony Fauci who said masks and other regulations must stay no matter if people are vaccinated. The Fauci idiot continued to wear two masks – different colours so both could be clearly seen – after he *claimed* to have been vaccinated. Senator Rand Paul told Fauci in one exchange that his double-masks were 'theatre' and he was right. It's all theatre. Mary Ramsay back-tracked on the vaccine-return-to-normal theme when she said the public may need to wear masks and social-distance for years despite the jabs. 'People have got used to those lower-level restrictions now, and [they] can live with them', she said telling us what the idea has been all along. 'The vaccine does not give you a pass, even if you have had it, you must continue to follow all the guidelines' said a Public Health England statement which reneged on what we had been told before and made having the 'vaccine' irrelevant to 'normality' even by the official story. Spain's fascist government trumped everyone by passing a law mandating the wearing of masks on the beach and even when swimming in the sea. The move would have devastated what's left of the Spanish tourist industry, posed potential breathing dangers to swimmers and had Northern European sunbathers walking around with their forehead brown and the rest of their face white as a sheet. The ruling was so crazy that it had to be retracted after pressure from public and tourist industry, but it confirmed where the Cult wants to go with masks and how clinically insane authority has become. The determination to make masks permanent and hide the serious dangers to body and mind can be seen in the censorship of scientist Professor Denis Rancourt by Bill Gates-funded academic publishing website ResearchGate over his papers exposing the dangers and uselessness of masks. Rancourt said:

ResearchGate today has permanently locked my account, which I have had since 2015. Their reasons graphically show the nature of their attack against democracy, and their corruption of

science ... By their obscene non-logic, a scientific review of science articles reporting on harms caused by face masks has a 'potential to cause harm'. No criticism of the psychological device (face masks) is tolerated, if the said criticism shows potential to influence public policy.

This is what happens in a fascist world.

Where are the 'greens' (again)?

Other dangers of wearing masks especially regularly relate to the inhalation of minute plastic fibres into the lungs and the deluge of discarded masks in the environment and oceans. Estimates predicted that more than 1.5 billion disposable masks will end up in the world's oceans every year polluting the water with tons of plastic and endangering marine wildlife. Studies project that humans are using 129 billion face masks each month worldwide – about three million a minute. Most are disposable and made from plastic, non-biodegradable microfibers that break down into smaller plastic particles that become widespread in ecosystems. They are littering cities, clogging sewage channels and turning up in bodies of water. I have written in other books about the immense amounts of microplastics from endless sources now being absorbed into the body. Rolf Halden, director of the Arizona State University (ASU) Biodesign Center for Environmental Health Engineering, was the senior researcher in a 2020 study that analysed 47 human tissue samples and found microplastics in all of them. 'We have detected these chemicals of plastics in every single organ that we have investigated', he said. I wrote in *The Answer* about the world being deluged with microplastics. A study by the Worldwide Fund for Nature (WWF) found that people are consuming on average every week some 2,000 tiny pieces of plastic mostly through water and also through marine life and the air. Every year humans are ingesting enough microplastics to fill a heaped dinner plate and in a life-time of 79 years it is enough to fill two large waste bins. Marco Lambertini, WWF International director general said: 'Not only are plastics polluting our oceans and waterways and killing marine life – it's in all of us and we can't escape consuming plastics,' American

geologists found tiny plastic fibres, beads and shards in rainwater samples collected from the remote slopes of the Rocky Mountain National Park near Denver, Colorado. Their report was headed: 'It is raining plastic.' Rachel Adams, senior lecturer in Biomedical Science at Cardiff Metropolitan University, said that among health consequences are internal inflammation and immune responses to a 'foreign body'. She further pointed out that microplastics become carriers of toxins including mercury, pesticides and dioxins (a known cause of cancer and reproductive and developmental problems). These toxins accumulate in the fatty tissues once they enter the body through microplastics. Now this is being compounded massively by people putting plastic on their face and throwing it away.

Workers exposed to polypropylene plastic fibres known as 'flock' have developed 'flock worker's lung' from inhaling small pieces of the flock fibres which can damage lung tissue, reduce breathing capacity and exacerbate other respiratory problems. *Now ...* commonly used surgical masks have three layers of melt-blown textiles made of ... polypropylene. We have billions of people putting these microplastics against their mouth, nose and face for hours at a time day after day in the form of masks. How does anyone think that will work out? I mean – what could possibly go wrong? We posted a number of scientific studies on this at davidicke.com, but when I went back to them as I was writing this book the links to the science research website where they were hosted were dead. Anything that challenges the official narrative in any way is either censored or vilified. The official narrative is so unsupportable by the evidence that only deleting the truth can protect it. A study by Chinese scientists still survived – with the usual twist which it why it was still active, I guess. Yes, they found that virtually all the masks they tested increased the daily intake of microplastic fibres, but people should still wear them because the danger from the 'virus' was worse said the crazy 'team' from the Institute of Hydrobiology in Wuhan. Scientists first discovered microplastics in lung tissue of some patients who died of lung cancer

in the 1990s. Subsequent studies have confirmed the potential health damage with the plastic degrading slowly and remaining in the lungs to accumulate in volume. Wuhan researchers used a machine simulating human breathing to establish that masks shed up to nearly 4,000 microplastic fibres in a month with reused masks producing more. Scientists said some masks are laced with toxic chemicals and a variety of compounds seriously restricted for both health and environmental reasons. They include cobalt (used in blue dye) and formaldehyde known to cause watery eyes, burning sensations in the eyes, nose, and throat, plus coughing, wheezing and nausea. No – that must be ‘Covid-19’.

Mask ‘worms’

There is another and potentially even more sinister content of masks. Mostly new masks of different makes filmed under a microscope around the world have been found to contain strange black fibres or ‘worms’ that appear to move or ‘crawl’ by themselves and react to heat and water. The nearest I have seen to them are the self-replicating fibres that are pulled out through the skin of those suffering from Morgellons disease which has been connected to the phenomena of ‘chemtrails’ which I will bring into the story later on. Morgellons fibres continue to grow outside the body and have a form of artificial intelligence. Black ‘worm’ fibres in masks have that kind of feel to them and there is a nanotechnology technique called ‘worm micelles’ which carry and release drugs or anything else you want to deliver to the body. For sure the suppression of humanity by mind altering drugs is the Cult agenda big time and the more excuses they can find to gain access to the body the more opportunities there are to make that happen whether through ‘vaccines’ or masks pushed against the mouth and nose for hours on end.

So let us summarise the pros and cons of masks:

Against masks: Breathing in your own carbon dioxide; depriving the body and brain of sufficient oxygen; build-up of toxins in the mask that can be breathed into the lungs and cause rashes on the face and 'mask-mouth'; breathing microplastic fibres and toxic chemicals into the lungs; dehumanisation and deleting individualisation by literally making people faceless; destroying human emotional interaction through facial expression and deleting parental connection with their babies which look for guidance to their facial expression.

For masks: They don't protect you from a 'virus' that doesn't exist and even if it did 'viral' particles are so minute they are smaller than the holes in the mask.

Governments, police, supermarkets, businesses, transport companies, and all the rest who seek to impose masks have done no risk assessment on their consequences for health and psychology and are now open to group lawsuits when the impact becomes clear with a cumulative epidemic of respiratory and other disease. Authorities will try to exploit these effects and hide the real cause by dubbing them 'Covid-19'. Can you imagine setting out to force the population to wear health-destroying masks without doing any assessment of the risks? It is criminal and it is evil, but then how many people targeted in this way, who see their children told to wear them all day at school, have asked for a risk assessment? Billions can't be imposed upon by the few unless the billions allow it. Oh, yes, with just a tinge of irony, 85 percent of all masks made worldwide come from *China*.

Wash your hands in toxic shite

'Covid' rules include the use of toxic sanitisers and again the health consequences of constantly applying toxins to be absorbed through the skin is obvious to any level of Renegade Mind. America's Food and Drug Administration (FDA) said that sanitisers are drugs and issued a warning about 75 dangerous brands which contain

methanol used in antifreeze and can cause death, kidney damage and blindness. The FDA circulated the following warning even for those brands that it claims to be safe:

Store hand sanitizer out of the reach of pets and children, and children should use it only with adult supervision. Do not drink hand sanitizer. This is particularly important for young children, especially toddlers, who may be attracted by the pleasant smell or brightly colored bottles of hand sanitizer.

Drinking even a small amount of hand sanitizer can cause alcohol poisoning in children. (However, there is no need to be concerned if your children eat with or lick their hands after using hand sanitizer.) During this coronavirus pandemic, poison control centers have had an increase in calls about accidental ingestion of hand sanitizer, so it is important that adults monitor young children's use.

Do not allow pets to swallow hand sanitizer. If you think your pet has eaten something potentially dangerous, call your veterinarian or a pet poison control center right away. Hand sanitizer is flammable and should be stored away from heat and flames. When using hand sanitizer, rub your hands until they feel completely dry before performing activities that may involve heat, sparks, static electricity, or open flames.

There you go, perfectly safe, then, and that's without even a mention of the toxins absorbed through the skin. Come on kids – sanitise your hands everywhere you go. It will save you from the 'virus'. Put all these elements together of the 'Covid' normal and see how much health and psychology is being cumulatively damaged, even devastated, to 'protect your health'. Makes sense, right? They are only imposing these things because they care, right? *Right?*

Submitting to insanity

Psychological reframing of the population goes very deep and is done in many less obvious ways. I hear people say how contradictory and crazy 'Covid' rules are and how they are ever changing. This is explained away by dismissing those involved as idiots. It is a big mistake. The Cult is delighted if its cold calculation is perceived as incompetence and idiocy when it is anything but. Oh, yes, there are idiots within the system – lots of them – but they are *administering* the Cult agenda, mostly unknowingly. They are not deciding and dictating it. The bulwark against tyranny is self-

respect, always has been, always will be. It is self-respect that has broken every tyranny in history. By its very nature self-respect will not bow to oppression and its perpetrators. There is so little self-respect that it's always the few that overturn dictators. Many may eventually follow, but the few with the iron spines (self-respect) kick it off and generate the momentum. The Cult targets self-respect in the knowledge that once this has gone only submission remains. Crazy, contradictory, ever-changing 'Covid' rules are systematically applied by psychologists to delete self-respect. They *want* you to see that the rules make no sense. It is one thing to decide to do something when *you* have made the choice based on evidence and logic. You still retain your self-respect. It is quite another when you can see what you are being told to do is insane, ridiculous and makes no sense, and *yet you still do it*. Your self-respect is extinguished and this has been happening as ever more obviously stupid and nonsensical things have been demanded and the great majority have complied even when they can see they are stupid and nonsensical.

People walk around in face-nappies knowing they are damaging their health and make no difference to a 'virus'. They do it in fear of not doing it. I know it's daft, but I'll do it anyway. When that happens something dies inside of you and submissive reframing has begun. Next there's a need to hide from yourself that you have conceded your self-respect and you convince yourself that you have not really submitted to fear and intimidation. You begin to believe that you are complying with craziness because it's the right thing to do. When first you concede your self-respect of $2+2 = 4$ to $2+2 = 5$ you *know* you are compromising your self-respect. Gradually to avoid facing that fact you begin to *believe* that $2+2=5$. You have been reframed and I have been watching this process happening in the human psyche on an industrial scale. The Cult is working to break your spirit and one of its major tools in that war is humiliation. I read how former American soldier Bradley Manning (later Chelsea Manning after a sex-change) was treated after being jailed for supplying WikiLeaks with documents exposing the enormity of

government and elite mendacity. Manning was isolated in solitary confinement for eight months, put under 24-hour surveillance, forced to hand over clothing before going to bed, and stand naked for every roll call. This is systematic humiliation. The introduction of anal swab 'Covid' tests in China has been done for the same reason to delete self-respect and induce compliant submission. Anal swabs are mandatory for incoming passengers in parts of China and American diplomats have said they were forced to undergo the indignity which would have been calculated humiliation by the Cult-owned Chinese government that has America in its sights.

Government-people: An abusive relationship

Spirit-breaking psychological techniques include giving people hope and apparent respite from tyranny only to take it away again. This happened in the UK during Christmas, 2020, when the psycho-psychologists and their political lackeys announced an easing of restrictions over the holiday only to reimpose them almost immediately on the basis of yet another lie. There is a big psychological difference between getting used to oppression and being given hope of relief only to have that dashed. Psychologists know this and we have seen the technique used repeatedly. Then there is traumatising people before you introduce more extreme regulations that require compliance. A perfect case was the announcement by the dark and sinister Whitty and Vallance in the UK that 'new data' predicted that 4,000 could die every day over the winter of 2020/2021 if we did not lockdown again. I think they call it lying and after traumatising people with that claim out came Jackboot Johnson the next day with new curbs on human freedom. Psychologists know that a frightened and traumatised mind becomes suggestable to submission and behaviour reframing. Underpinning all this has been to make people fearful and suspicious of each other and see themselves as a potential danger to others. In league with deleted self-respect you have the perfect psychological recipe for self-loathing. The relationship between authority and public is now demonstrably the same as that of

subservience to an abusive partner. These are signs of an abusive relationship explained by psychologist Leslie Becker-Phelps:

Psychological and emotional abuse: Undermining a partner's self-worth with verbal attacks, name-calling, and belittling. Humiliating the partner in public, unjustly accusing them of having an affair, or interrogating them about their every behavior. Keeping partner confused or off balance by saying they were just kidding or blaming the partner for 'making' them act this way ... Feigning in public that they care while turning against them in private. This leads to victims frequently feeling confused, incompetent, unworthy, hopeless, and chronically self-doubting. [Apply these techniques to how governments have treated the population since New Year, 2020, and the parallels are obvious.]

Physical abuse: The abuser might physically harm their partner in a range of ways, such as grabbing, hitting, punching, or shoving them. They might throw objects at them or harm them with a weapon. [Observe the physical harm imposed by masks, lockdown, and so on.]

Threats and intimidation: One way abusers keep their partners in line is by instilling fear. They might be verbally threatening, or give threatening looks or gestures. Abusers often make it known that they are tracking their partner's every move. They might destroy their partner's possessions, threaten to harm them, or threaten to harm their family members. Not surprisingly, victims of this abuse often feel anxiety, fear, and panic. [No words necessary.]

Isolation: Abusers often limit their partner's activities, forbidding them to talk or interact with friends or family. They might limit access to a car or even turn off their phone. All of this might be done by physically holding them against their will, but is often accomplished through psychological abuse and intimidation. The more isolated a person feels, the fewer resources they have to help gain perspective on their situation and to escape from it. [No words necessary.]

Economic abuse: Abusers often make their partners beholden to them for money by controlling access to funds of any kind. They might prevent their partner from getting a job or withhold access to money they earn from a job. This creates financial dependency that makes leaving the relationship very difficult. [See destruction of livelihoods and the proposed meagre 'guaranteed income' so long as you do whatever you are told.]

Using children: An abuser might disparage their partner's parenting skills, tell their children lies about their partner, threaten to take custody of their children, or threaten to harm their children. These tactics instil fear and often elicit compliance. [See reframed social service mafia and how children are being mercilessly abused by the state over 'Covid' while their parents look on too frightened to do anything.]

A further recurring trait in an abusive relationship is the abused blaming themselves for their abuse and making excuses for the abuser. We have the public blaming each other for lockdown abuse by government and many making excuses for the government while attacking those who challenge the government. How often we have heard authorities say that rules are being imposed or reimposed only because people have refused to 'behave' and follow the rules. We don't want to do it – it's *you*.

Renegade Minds are an antidote to all of these things. They will never concede their self-respect no matter what the circumstances. Even when apparent humiliation is heaped upon them they laugh in its face and reflect back the humiliation on the abuser where it belongs. Renegade Minds will never wear masks they know are only imposed to humiliate, suppress and damage both physically and psychologically. Consequences will take care of themselves and they will never break their spirit or cause them to concede to tyranny. UK newspaper columnist Peter Hitchens was one of the few in the mainstream media to speak out against lockdowns and forced vaccinations. He then announced he had taken the jab. He wanted to see family members abroad and he believed vaccine passports were inevitable even though they had not yet been introduced. Hitchens

has a questioning and critical mind, but not a Renegade one. If he had no amount of pressure would have made him concede. Hitchens excused his action by saying that the battle has been lost. Renegade Minds never accept defeat when freedom is at stake and even if they are the last one standing the self-respect of not submitting to tyranny is more important than any outcome or any consequence.

That's why Renegade Minds are the only minds that ever changed anything worth changing.

CHAPTER EIGHT

'Reframing' insanity

Insanity is relative. It depends on who has who locked in what cage
Ray Bradbury

Reframing' a mind means simply to change its perception and behaviour. This can be done subconsciously to such an extent that subjects have no idea they have been 'reframed' while to any observer changes in behaviour and attitudes are obvious.

Human society is being reframed on a ginormous scale since the start of 2020 and here we have the reason why psychologists rather than doctors have been calling the shots. Ask most people who have succumbed to 'Covid' reframing if they have changed and most will say 'no'; but they *have* and fundamentally. The Cult's long-game has been preparing for these times since way back and crucial to that has been to prepare both population and officialdom mentally and emotionally. To use the mind-control parlance they had to reframe the population with a mentality that would submit to fascism and reframe those in government and law enforcement to impose fascism or at least go along with it. The result has been the fact-deleted mindlessness of 'Wokeness' and officialdom that has either enthusiastically or unquestioningly imposed global tyranny demanded by reframed politicians on behalf of psychopathic and deeply evil cultists. 'Cognitive reframing' identifies and challenges the way someone sees the world in the form of situations, experiences and emotions and then restructures those perceptions to view the same set of circumstances in a different way. This can have

benefits if the attitudes are personally destructive while on the other side it has the potential for individual and collective mind control which the subject has no idea has even happened.

Cognitive therapy was developed in the 1960s by Aaron T. Beck who was born in Rhode Island in 1921 as the son of Jewish immigrants from the Ukraine. He became interested in the techniques as a treatment for depression. Beck's daughter Judith S. Beck is prominent in the same field and they founded the Beck Institute for Cognitive Behavior Therapy in Philadelphia in 1994. Cognitive reframing, however, began to be used worldwide by those with a very dark agenda. The Cult reframes politicians to change their attitudes and actions until they are completely at odds with what they once appeared to stand for. The same has been happening to government administrators at all levels, law enforcement, military and the human population. Cultists love mind control for two main reasons: It allows them to control what people think, do and say to secure agenda advancement and, by definition, it calms their legendary insecurity and fear of the unexpected. I have studied mind control since the time I travelled America in 1996. I may have been talking to next to no one in terms of an audience in those years, but my goodness did I gather a phenomenal amount of information and knowledge about so many things including the techniques of mind control. I have described this in detail in other books going back to *The Biggest Secret* in 1998. I met a very large number of people recovering from MKUltra and its offshoots and successors and I began to see how these same techniques were being used on the population in general. This was never more obvious than since the 'Covid' hoax began.

Reframing the enforcers

I have observed over the last two decades and more the very clear transformation in the dynamic between the police, officialdom and the public. I tracked this in the books as the relationship mutated from one of serving the public to seeing them as almost the enemy and certainly a lower caste. There has always been a class divide

based on income and always been some psychopathic, corrupt, and big-I-am police officers. This was different. Wholesale change was unfolding in the collective dynamic; it was less about money and far more about position and perceived power. An us-and-them was emerging. Noses were lifted skyward by government administration and law enforcement and their attitude to the public they were *supposed* to be serving changed to one of increasing contempt, superiority and control. The transformation was so clear and widespread that it had to be planned. Collective attitudes and dynamics do not change naturally and organically that quickly on that scale. I then came across an organisation in Britain called Common Purpose created in the late 1980s by Julia Middleton who would work in the office of Deputy Prime Minister John Prescott during the long and disastrous premiership of war criminal Tony Blair. When Blair speaks the Cult is speaking and the man should have been in jail a long time ago. Common Purpose proclaims itself to be one of the biggest 'leadership development' organisations in the world while functioning as a *charity* with all the financial benefits which come from that. It hosts 'leadership development' courses and programmes all over the world and claims to have 'brought together' what it calls 'leaders' from more than 100 countries on six continents. The modus operandi of Common Purpose can be compared with the work of the UK government's reframing network that includes the Behavioural Insights Team 'nudge unit' and 'Covid' reframing specialists at SPI-B. WikiLeaks described Common Purpose long ago as 'a hidden virus in our government and schools' which is unknown to the general public: 'It recruits and trains "leaders" to be loyal to the directives of Common Purpose and the EU, instead of to their own departments, which they then undermine or subvert, the NHS [National Health Service] being an example.' This is a vital point to understand the 'Covid' hoax. The NHS, and its equivalent around the world, has been utterly reframed in terms of administrators and much of the medical personnel with the transformation underpinned by recruitment policies. The outcome has been the criminal and psychopathic behaviour of the

NHS over 'Covid' and we have seen the same in every other major country. WikiLeaks said Common Purpose trainees are 'learning to rule without regard to democracy' and to usher in a police state (current events explained). Common Purpose operated like a 'glue' and had members in the NHS, BBC, police, legal profession, church, many of Britain's 7,000 quangos, local councils, the Civil Service, government ministries and Parliament, and controlled many RDA's (Regional Development Agencies). Here we have one answer for how and why British institutions and their like in other countries have changed so negatively in relation to the public. This further explains how and why the beyond-disgraceful reframed BBC has become a propaganda arm of 'Covid' fascism. They are all part of a network pursuing the same goal.

By 2019 Common Purpose was quoting a figure of 85,000 'leaders' that had attended its programmes. These 'students' of all ages are known as Common Purpose 'graduates' and they consist of government, state and local government officials and administrators, police chiefs and officers, and a whole range of others operating within the national, local and global establishment. Cressida Dick, Commissioner of the London Metropolitan Police, is the Common Purpose graduate who was the 'Gold Commander' that oversaw what can only be described as the murder of Brazilian electrician Jean Charles de Menezes in 2005. He was held down by psychopathic police and shot seven times in the head by a psychopathic lunatic after being mistaken for a terrorist when he was just a bloke going about his day. Dick authorised officers to pursue and keep surveillance on de Menezes and ordered that he be stopped from entering the underground train system. Police psychopaths took her at her word clearly. She was 'disciplined' for this outrage by being *promoted* – eventually to the top of the 'Met' police where she has been a disaster. Many Chief Constables controlling the police in different parts of the UK are and have been Common Purpose graduates. I have heard the 'graduate' network described as a sort of Mafia or secret society operating within the fabric of government at all levels pursuing a collective policy

ingrained at Common Purpose training events. Founder Julia Middleton herself has said:

Locally and internationally, Common Purpose graduates will be 'lighting small fires' to create change in their organisations and communities ... The Common Purpose effect is best illustrated by the many stories of small changes brought about by leaders, who themselves have changed.

A Common Purpose mission statement declared:

Common Purpose aims to improve the way society works by expanding the vision, decision-making ability and influence of all kinds of leaders. The organisation runs a variety of educational programmes for leaders of all ages, backgrounds and sectors, in order to provide them with the inspirational, information and opportunities they need to change the world.

Yes, but into what? Since 2020 the answer has become clear.

NLP and the Delphi technique

Common Purpose would seem to be a perfect name or would common programming be better? One of the foundation methods of reaching 'consensus' (group think) is by setting the agenda theme and then encouraging, cajoling or pressuring everyone to agree a 'consensus' in line with the core theme promoted by Common Purpose. The methodology involves the 'Delphi technique', or an adaption of it, in which opinions are expressed that are summarised by a 'facilitator or change agent' at each stage. Participants are 'encouraged' to modify their views in the light of what others have said. Stage by stage the former individual opinions are merged into group consensus which just happens to be what Common Purpose wants them to believe. A key part of this is to marginalise anyone refusing to concede to group think and turn the group against them to apply pressure to conform. We are seeing this very technique used on the general population to make 'Covid' group-thinkers hostile to those who have seen through the bullshit. People can be reframed by using perception manipulation methods such as Neuro-Linguistic Programming (NLP) in which you change perception with the use of

carefully constructed language. An NLP website described the technique this way:

... A method of influencing brain behaviour (the 'neuro' part of the phrase) through the use of language (the 'linguistic' part) and other types of communication to enable a person to 'recode' the way the brain responds to stimuli (that's the 'programming') and manifest new and better behaviours. Neuro-Linguistic Programming often incorporates hypnosis and self-hypnosis to help achieve the change (or 'programming') that is wanted.

British alternative media operation UKColumn has done very detailed research into Common Purpose over a long period. I quoted co-founder and former naval officer Brian Gerrish in my book *Remember Who You Are*, published in 2011, as saying the following years before current times:

It is interesting that many of the mothers who have had children taken by the State speak of the Social Services people being icily cool, emotionless and, as two ladies said in slightly different words, '... like little robots'. We know that NLP is cumulative, so people can be given small imperceptible doses of NLP in a course here, another in a few months, next year etc. In this way, major changes are accrued in their personality, but the day by day change is almost unnoticeable.

In these and other ways 'graduates' have had their perceptions uniformly reframed and they return to their roles in the institutions of government, law enforcement, legal profession, military, 'education', the UK National Health Service and the whole swathe of the establishment structure to pursue a common agenda preparing for the 'post-industrial', 'post-democratic' society. I say 'preparing' but we are now there. 'Post-industrial' is code for the Great Reset and 'post-democratic' is 'Covid' fascism. UKColumn has spoken to partners of those who have attended Common Purpose 'training'. They have described how personalities and attitudes of 'graduates' changed very noticeably for the worse by the time they had completed the course. They had been 'reframed' and told they are the 'leaders' – the special ones – who know better than the population. There has also been the very demonstrable recruitment of psychopaths and narcissists into government administration at all

levels and law enforcement. If you want psychopathy hire psychopaths and you get a simple cause and effect. If you want administrators, police officers and 'leaders' to perceive the public as lesser beings who don't matter then employ narcissists. These personalities are identified using 'psychometrics' that identifies knowledge, abilities, attitudes and personality traits, mostly through carefully-designed questionnaires and tests. As this policy has passed through the decades we have had power-crazy, power-trippers appointed into law enforcement, security and government administration in preparation for current times and the dynamic between public and law enforcement/officialdom has been transformed. UKColumn's Brian Gerrish said of the narcissistic personality:

Their love of themselves and power automatically means that they will crush others who get in their way. I received a major piece of the puzzle when a friend pointed out that when they made public officials re-apply for their own jobs several years ago they were also required to do psychometric tests. This was undoubtedly the start of the screening process to get 'their' sort of people in post.

How obvious that has been since 2020 although it was clear what was happening long before if people paid attention to the changing public-establishment dynamic.

Change agents

At the centre of events in 'Covid' Britain is the National Health Service (NHS) which has behaved disgracefully in slavishly following the Cult agenda. The NHS management structure is awash with Common Purpose graduates or 'change agents' working to a common cause. Helen Bevan, a Chief of Service Transformation at the NHS Institute for Innovation and Improvement, co-authored a document called 'Towards a million change agents, a review of the social movements literature: implications for large scale change in the NHS'. The document compared a project management approach to that of change and social movements where 'people change

themselves and each other – peer to peer’. Two definitions given for a ‘social movement’ were:

A group of people who consciously attempt to build a radically new social order; involves people of a broad range of social backgrounds; and deploys politically confrontational and socially disruptive tactics – Cyrus Zirakzadeh 1997

Collective challenges, based on common purposes and social solidarities, in sustained interaction with elites, opponents, and authorities – Sidney Tarrow 1994

Helen Bevan wrote another NHS document in which she defined ‘framing’ as ‘the process by which leaders construct, articulate and put across their message in a powerful and compelling way in order to win people to their cause and call them to action’. I think I could come up with another definition that would be rather more accurate. The National Health Service and institutions of Britain and the wider world have been taken over by reframed ‘change agents’ and that includes everything from the United Nations to national governments, local councils and social services which have been kidnapping children from loving parents on an extraordinary and gathering scale on the road to the end of parenthood altogether. Children from loving homes are stolen and kidnapped by the state and put into the ‘care’ (inversion) of the local authority through council homes, foster parents and forced adoption. At the same time children are allowed to be abused without response while many are under council ‘care’. UKColumn highlighted the Common Purpose connection between South Yorkshire Police and Rotherham council officers in the case of the scandal in that area of the sexual exploitation of children to which the authorities turned not one blind eye, but both:

We were alarmed to discover that the Chief Executive, the Strategic Director of Children and Young People's Services, the Manager for the Local Strategic Partnership, the Community Cohesion Manager, the Cabinet Member for Cohesion, the Chief Constable and his predecessor had all attended Leadership training courses provided by the pseudo-charity Common Purpose.

Once 'change agents' have secured positions of hire and fire within any organisation things start to move very quickly. Personnel are then hired and fired on the basis of whether they will work towards the agenda the change agent represents. If they do they are rapidly promoted even though they may be incompetent. Those more qualified and skilled who are pre-Common Purpose 'old school' see their careers stall and even disappear. This has been happening for decades in every institution of state, police, 'health' and social services and all of them have been transformed as a result in their attitudes to their jobs and the public. Medical professions, including nursing, which were once vocations for the caring now employ many cold, callous and couldn't give a shit personality types. The UKColumn investigation concluded:

By blurring the boundaries between people, professions, public and private sectors, responsibility and accountability, Common Purpose encourages 'graduates' to believe that as new selected leaders, they can work together, outside of the established political and social structures, to achieve a paradigm shift or CHANGE – so called 'Leading Beyond Authority'. In doing so, the allegiance of the individual becomes 'reframed' on CP colleagues and their NETWORK.

Reframing the Face-Nappies

Nowhere has this process been more obvious than in the police where recruitment of psychopaths and development of unquestioning mind-controlled group-thinkers have transformed law enforcement into a politically-correct 'Woke' joke and a travesty of what should be public service. Today they wear their face-nappies like good little gofers and enforce 'Covid' rules which are fascism under another name. Alongside the specifically-recruited psychopaths we have software minds incapable of free thought. Brian Gerrish again:

An example is the policeman who would not get on a bike for a press photo because he had not done the cycling proficiency course. Normal people say this is political correctness gone mad. Nothing could be further from the truth. The policeman has been reframed, and in his reality it is perfect common sense not to get on the bike 'because he hasn't done the cycling course'.

Another example of this is where the police would not rescue a boy from a pond until they had taken advice from above on the 'risk assessment'. A normal person would have arrived, perhaps thought of the risk for a moment, and dived in. To the police now 'reframed', they followed 'normal' procedure.

There are shocking cases of reframed ambulance crews doing the same. Sheer unthinking stupidity of London Face-Nappies headed by Common Purpose graduate Cressida Dick can be seen in their behaviour at a vigil in March, 2021, for a murdered woman, Sarah Everard. A police officer had been charged with the crime. Anyone with a brain would have left the vigil alone in the circumstances. Instead they 'manhandled' women to stop them breaking 'Covid rules' to betray classic reframing. Minds in the thrall of perception control have no capacity for seeing a situation on its merits and acting accordingly. 'Rules is rules' is their only mind-set. My father used to say that rules and regulations are for the guidance of the intelligent and the blind obedience of the idiot. Most of the intelligent, decent, coppers have gone leaving only the other kind and a few old school for whom the job must be a daily nightmare. The combination of psychopaths and rule-book software minds has been clearly on public display in the 'Covid' era with automaton robots in uniform imposing fascistic 'Covid' regulations on the population without any personal initiative or judging situations on their merits. There are thousands of examples around the world, but I'll make my point with the infamous Derbyshire police in the English East Midlands – the ones who think pouring dye into beauty spots and using drones to track people walking in the countryside away from anyone is called 'policing'. To them there are rules decreed by the government which they have to enforce and in their bewildered state a group gathering in a closed space and someone walking alone in the countryside are the same thing. It is beyond idiocy and enters the realm of clinical insanity.

Police officers in Derbyshire said they were 'horrified' – *horrified* – to find 15 to 20 'irresponsible' kids playing a football match at a closed leisure centre 'in breach of coronavirus restrictions'. When they saw the police the kids ran away leaving their belongings behind and the reframed men and women of Derbyshire police were seeking to establish their identities with a view to fining their parents. The most natural thing for youngsters to do – kicking a ball about – is turned into a criminal activity and enforced by the moronic software programs of Derbyshire police. You find the same mentality in every country. These barely conscious 'horrified' officers said they had to take action because 'we need to ensure these rules are being followed' and 'it is of the utmost importance that you ensure your children are following the rules and regulations for Covid-19'. Had any of them done ten seconds of research to see if this parroting of their masters' script could be supported by any evidence? Nope. Reframed people don't think – others think for them and that's the whole idea of reframing. I have seen police officers one after the other repeating without question word for word what officialdom tells them just as I have seen great swathes of the public doing the same. Ask either for 'their' opinion and out spews what they have been told to think by the official narrative. Police and public may seem to be in different groups, but their mentality is the same. Most people do whatever they are told in fear not doing so or because they believe what officialdom tells them; almost the entirety of the police do what they are told for the same reason. Ultimately it's the tiny inner core of the global Cult that's telling both what to do.

So Derbyshire police were 'horrified'. Oh, really? Why did they think those kids were playing football? It was to relieve the psychological consequences of lockdown and being denied human contact with their friends and interaction, touch and discourse vital to human psychological health. Being denied this month after month has dismantled the psyche of many children and young people as depression and suicide have exploded. Were Derbyshire police *horrified by that*? Are you kidding? Reframed people don't have those

mental and emotional processes that can see how the impact on the psychological health of youngsters is far more dangerous than any 'virus' even if you take the mendacious official figures to be true. The reframed are told (programmed) how to act and so they do. The Derbyshire Chief Constable in the first period of lockdown when the black dye and drones nonsense was going on was Peter Goodman. He was the man who severed the connection between his force and the Derbyshire Constabulary *Male Voice* Choir when he decided that it was not inclusive enough to allow women to join. The fact it was a male voice choir making a particular sound produced by male voices seemed to elude a guy who terrifyingly ran policing in Derbyshire. He retired weeks after his force was condemned as disgraceful by former Supreme Court Justice Jonathan Sumption for their behaviour over extreme lockdown impositions. Goodman was replaced by his deputy Rachel Swann who was in charge when her officers were 'horrified'. The police statement over the boys committing the hanging-offence of playing football included the line about the youngsters being 'irresponsible in the times we are all living through' missing the point that the real relevance of the 'times we are all living through' is the imposition of fascism enforced by psychopaths and reframed minds of police officers playing such a vital part in establishing the fascist tyranny that their own children and grandchildren will have to live in their entire lives. As a definition of insanity that is hard to beat although it might be run close by imposing masks on people that can have a serious effect on their health while wearing a face nappy all day themselves. Once again public and police do it for the same reason – the authorities tell them to and who are they to have the self-respect to say no?

Wokers in uniform

How reframed do you have to be to arrest a *six-year-old* and take him to court for *picking a flower* while waiting for a bus? Brain dead police and officialdom did just that in North Carolina where criminal proceedings happen regularly for children under nine. Attorney Julie Boyer gave the six-year-old crayons and a colouring book

during the 'flower' hearing while the 'adults' decided his fate. County Chief District Court Judge Jay Corpening asked: 'Should a child that believes in Santa Claus, the Easter Bunny and the tooth fairy be making life-altering decisions?' Well, of course not, but common sense has no meaning when you have a common purpose and a reframed mind. Treating children in this way, and police operating in American schools, is all part of the psychological preparation for children to accept a police state as normal all their adult lives. The same goes for all the cameras and biometric tracking technology in schools. Police training is focused on reframing them as snowflake Wokers and this is happening in the military. Pentagon top brass said that 'training sessions on extremism' were needed for troops who asked why they were so focused on the Capitol Building riot when Black Lives Matter riots were ignored. What's the difference between them some apparently and rightly asked. Actually, there is a difference. Five people died in the Capitol riot, only one through violence, and that was a police officer shooting an unarmed protestor. BLM riots killed at least 25 people and cost billions. Asking the question prompted the psychopaths and reframed minds that run the Pentagon to say that more 'education' (programming) was needed. Troop training is all based on psychological programming to make them fodder for the Cult – 'Military men are just dumb, stupid animals to be used as pawns in foreign policy' as Cult-to-his-DNA former Secretary of State Henry Kissinger famously said. Governments see the police in similar terms and it's time for those among them who can see this to defend the people and stop being enforcers of the Cult agenda upon the people.

The US military, like the country itself, is being targeted for destruction through a long list of Woke impositions. Cult-owned gaga 'President' Biden signed an executive order when he took office to allow taxpayer money to pay for transgender surgery for active military personnel and veterans. Are you a man soldier? No, I'm a LGBTQIA+ with a hint of Skoliosexual and Spectrasexual. Oh, good man. Bad choice of words you bigot. The Pentagon announced in March, 2021, the appointment of the first 'diversity and inclusion

officer' for US Special Forces. Richard Torres-Estrada arrived with the publication of a 'D&I Strategic Plan which will guide the enterprise-wide effort to institutionalize and sustain D&I'. If you think a Special Forces 'Strategic Plan' should have something to do with defending America you haven't been paying attention. Defending Woke is now the military's new role. Torres-Estrada has posted images comparing Donald Trump with Adolf Hitler and we can expect no bias from him as a representative of the supposedly non-political Pentagon. Cable news host Tucker Carlson said: 'The Pentagon is now the Yale faculty lounge but with cruise missiles.' Meanwhile Secretary of Defense Lloyd Austin, a board member of weapons-maker Raytheon with stock and compensation interests in October, 2020, worth \$1.4 million, said he was purging the military of the 'enemy within' – anyone who isn't Woke and supports Donald Trump. Austin refers to his targets as 'racist extremists' while in true Woke fashion being himself a racist extremist. Pentagon documents pledge to 'eradicate, eliminate and conquer all forms of racism, sexism and homophobia'. The definitions of these are decided by 'diversity and inclusion committees' peopled by those who see racism, sexism and homophobia in every situation and opinion. Woke (the Cult) is dismantling the US military and purging testosterone as China expands its military and gives its troops 'masculinity training'. How do we think that is going to end when this is all Cult coordinated? The US military, like the British military, is controlled by Woke and spineless top brass who just go along with it out of personal career interests.

'Woke' means fast asleep

Mind control and perception manipulation techniques used on individuals to create group-think have been unleashed on the global population in general. As a result many have no capacity to see the obvious fascist agenda being installed all around them or what 'Covid' is really all about. Their brains are firewalled like a computer system not to process certain concepts, thoughts and realisations that are bad for the Cult. The young are most targeted as the adults they

will be when the whole fascist global state is planned to be fully implemented. They need to be prepared for total compliance to eliminate all pushback from entire generations. The Cult has been pouring billions into taking complete control of 'education' from schools to universities via its operatives and corporations and not least Bill Gates as always. The plan has been to transform 'education' institutions into programming centres for the mentality of 'Woke'. James McConnell, professor of psychology at the University of Michigan, wrote in *Psychology Today* in 1970:

The day has come when we can combine sensory deprivation with drugs, hypnosis, and astute manipulation of reward and punishment, to gain almost absolute control over an individual's behaviour. It should then be possible to achieve a very rapid and highly effective type of brainwashing that would allow us to make dramatic changes in a person's behaviour and personality ...

... We should reshape society so that we all would be trained from birth to want to do what society wants us to do. We have the techniques to do it... no-one owns his own personality you acquired, and there's no reason to believe you should have the right to refuse to acquire a new personality if your old one is anti-social.

This was the potential for mass brainwashing in 1970 and the mentality there displayed captures the arrogant psychopathy that drives it forward. I emphasise that not all young people have succumbed to Woke programming and those that haven't are incredibly impressive people given that today's young are the most perceptually-targeted generations in history with all the technology now involved. Vast swathes of the young generations, however, have fallen into the spell – and that's what it is – of Woke. The Woke mentality and perceptual program is founded on *inversion* and you will appreciate later why that is so significant. Everything with Woke is inverted and the opposite of what it is claimed to be. Woke was a term used in African-American culture from the 1900s and referred to an awareness of social and racial justice. This is not the meaning of the modern version or 'New Woke' as I call it in *The Answer*. Oh, no, Woke today means something very different no matter how much Wokers may seek to hide that and insist Old Woke and New

Woke are the same. See if you find any 'awareness of social justice' here in the modern variety:

- Woke demands 'inclusivity' while excluding anyone with a different opinion and calls for mass censorship to silence other views.
- Woke claims to stand against oppression when imposing oppression is the foundation of all that it does. It is the driver of political correctness which is nothing more than a Cult invention to manipulate the population to silence itself.
- Woke believes itself to be 'liberal' while pursuing a global society that can only be described as fascist (see 'anti-fascist' fascist Antifa).
- Woke calls for 'social justice' while spreading injustice wherever it goes against the common 'enemy' which can be easily identified as a differing view.
- Woke is supposed to be a metaphor for 'awake' when it is solid-gold asleep and deep in a Cult-induced coma that meets the criteria for 'off with the fairies'.

I state these points as obvious facts if people only care to look. I don't do this with a sense of condemnation. We need to appreciate that the onslaught of perceptual programming on the young has been incessant and merciless. I can understand why so many have been reframed, or, given their youth, framed from the start to see the world as the Cult demands. The Cult has had access to their minds day after day in its 'education' system for their entire formative years. Perception is formed from information received and the Cult-created system is a life-long download of information delivered to elicit a particular perception, thus behaviour. The more this has expanded into still new extremes in recent decades and ever-increasing censorship has deleted other opinions and information why wouldn't that lead to a perceptual reframing on a mass scale? I

have described already cradle-to-grave programming and in more recent times the targeting of young minds from birth to adulthood has entered the stratosphere. This has taken the form of skewing what is 'taught' to fit the Cult agenda and the omnipresent techniques of group-think to isolate non-believers and pressure them into line. There has always been a tendency to follow the herd, but we really are in a new world now in relation to that. We have parents who can see the 'Covid' hoax told by their children not to stop them wearing masks at school, being 'Covid' tested or having the 'vaccine' in fear of the peer-pressure consequences of being different. What is 'peer-pressure' if not pressure to conform to group-think? Renegade Minds never group-think and always retain a set of perceptions that are unique to them. Group-think is always underpinned by consequences for not group-thinking. Abuse now aimed at those refusing DNA-manipulating 'Covid vaccines' are a potent example of this. The biggest pressure to conform comes from the very group which is itself being manipulated. 'I am programmed to be part of a hive mind and so you must be.'

Woke control structures in 'education' now apply to every mainstream organisation. Those at the top of the 'education' hierarchy (the Cult) decide the policy. This is imposed on governments through the Cult network; governments impose it on schools, colleges and universities; their leadership impose the policy on teachers and academics and they impose it on children and students. At any level where there is resistance, perhaps from a teacher or university lecturer, they are targeted by the authorities and often fired. Students themselves regularly demand the dismissal of academics (increasingly few) at odds with the narrative that the students have been programmed to believe in. It is quite a thought that students who are being targeted by the Cult become so consumed by programmed group-think that they launch protests and demand the removal of those who are trying to push back against those targeting the students. Such is the scale of perceptual inversion. We see this with 'Covid' programming as the Cult imposes the rules via psycho-psychologists and governments on

shops, transport companies and businesses which impose them on their staff who impose them on their customers who pressure Pushbackers to conform to the will of the Cult which is in the process of destroying them and their families. Scan all aspects of society and you will see the same sequence every time.

Fact free Woke and hijacking the 'left'

There is no more potent example of this than 'Woke', a mentality only made possible by the deletion of factual evidence by an 'education' system seeking to produce an ever more uniform society. Why would you bother with facts when you don't know any? Deletion of credible history both in volume and type is highly relevant. Orwell said: 'Who controls the past controls the future: who controls the present controls the past.' They who control the perception of the past control the perception of the future and they who control the present control the perception of the past through the writing and deleting of history. Why would you oppose the imposition of Marxism in the name of Wokeism when you don't know that Marxism cost at least 100 million lives in the 20th century alone? Watch videos and read reports in which Woker generations are asked basic historical questions – it's mind-blowing. A survey of 2,000 people found that six percent of millennials (born approximately early 1980s to early 2000s) believed the Second World War (1939-1945) broke out with the assassination of President Kennedy (in 1963) and one in ten thought Margaret Thatcher was British Prime Minister at the time. She was in office between 1979 and 1990. We are in a post-fact society. Provable facts are no defence against the fascism of political correctness or Silicon Valley censorship. Facts don't matter anymore as we have witnessed with the 'Covid' hoax. Sacrificing uniqueness to the Woke group-think religion is all you are required to do and that means thinking for yourself is the biggest Woke no, no. All religions are an expression of group-think and censorship and Woke is just another religion with an orthodoxy defended by group-think and censorship. Burned at

the stake becomes burned on Twitter which leads back eventually to burned at the stake as Woke humanity regresses to ages past.

The biggest Woke inversion of all is its creators and funders. I grew up in a traditional left of centre political household on a council estate in Leicester in the 1950s and 60s – you know, the left that challenged the power of wealth-hoarding elites and threats to freedom of speech and opinion. In those days students went on marches defending freedom of speech while today's Wokers march for its deletion. What on earth could have happened? Those very elites (collectively the Cult) that we opposed in my youth and early life have funded into existence the antithesis of that former left and hijacked the 'brand' while inverting everything it ever stood for. We have a mentality that calls itself 'liberal' and 'progressive' while acting like fascists. Cult billionaires and their corporations have funded themselves into control of 'education' to ensure that Woke programming is unceasing throughout the formative years of children and young people and that non-Wokers are isolated (that word again) whether they be students, teachers or college professors. The Cult has funded into existence the now colossal global network of Woke organisations that have spawned and promoted all the 'causes' on the Cult wish-list for global transformation and turned Wokers into demanders of them. Does anyone really think it's a coincidence that the Cult agenda for humanity is a carbon (sorry) copy of the societal transformations desired by Woke?? These are only some of them:

Political correctness: The means by which the Cult deletes all public debates that it knows it cannot win if we had the free-flow of information and evidence.

Human-caused 'climate change': The means by which the Cult seeks to transform society into a globally-controlled dictatorship imposing its will over the fine detail of everyone's lives 'to save the planet' which doesn't actually need saving.

Transgender obsession: Preparing collective perception to accept the 'new human' which would not have genders because it would be created technologically and not through procreation. I'll have much more on this in Human 2.0.

Race obsession: The means by which the Cult seeks to divide and rule the population by triggering racial division through the perception that society is more racist than ever when the opposite is the case. Is it perfect in that regard? No. But to compare today with the racism of apartheid and segregation brought to an end by the civil rights movement in the 1960s is to insult the memory of that movement and inspirations like Martin Luther King. Why is the 'anti-racism' industry (which it is) so dominated by privileged white people?

White supremacy: This is a label used by privileged white people to demonise poor and deprived white people pushing back on tyranny to marginalise and destroy them. White people are being especially targeted as the dominant race by number within Western society which the Cult seeks to transform in its image. If you want to change a society you must weaken and undermine its biggest group and once you have done that by using the other groups you next turn on them to do the same ... 'Then they came for the Jews and I was not a Jew so I did nothing.'

Mass migration: The mass movement of people from the Middle East, Africa and Asia into Europe, from the south into the United States and from Asia into Australia are another way the Cult seeks to dilute the racial, cultural and political influence of white people on Western society. White people ask why their governments appear to be working against them while being politically and culturally biased towards incoming cultures. Well, here's your answer. In the same way sexually 'straight' people, men and women, ask why the

authorities are biased against them in favour of other sexualities. The answer is the same – that's the way the Cult wants it to be for very sinister motives.

These are all central parts of the Cult agenda and central parts of the Woke agenda and Woke was created and continues to be funded to an immense degree by Cult billionaires and corporations. If anyone begins to say 'coincidence' the syllables should stick in their throat.

Billionaire 'social justice warriors'

Joe Biden is a 100 percent-owned asset of the Cult and the Wokers' man in the White House whenever he can remember his name and for however long he lasts with his rapidly diminishing cognitive function. Even walking up the steps of an aircraft without falling on his arse would appear to be a challenge. He's not an empty-shell puppet or anything. From the minute Biden took office (or the Cult did) he began his executive orders promoting the Woke wish-list. You will see the Woke agenda imposed ever more severely because it's really the *Cult* agenda. Woke organisations and activist networks spawned by the Cult are funded to the extreme so long as they promote what the Cult wants to happen. Woke is funded to promote 'social justice' by billionaires who become billionaires by destroying social justice. The social justice mantra is only a cover for dismantling social justice and funded by billionaires that couldn't give a damn about social justice. Everything makes sense when you see that. One of Woke's premier funders is Cult billionaire financier George Soros who said: 'I am basically there to make money, I cannot and do not look at the social consequences of what I do.' This is the same Soros who has given more than \$32 billion to his Open Society Foundations global Woke network and funded Black Lives Matter, mass immigration into Europe and the United States, transgender activism, climate change activism, political correctness and groups targeting 'white supremacy' in the form of privileged white thugs that dominate Antifa. What a scam it all is and when

you are dealing with the unquestioning fact-free zone of Woke scamming them is child's play. All you need to pull it off in all these organisations are a few in-the-know agents of the Cult and an army of naïve, reframed, uninformed, narcissistic, know-nothings convinced of their own self-righteousness, self-purity and virtue.

Soros and fellow billionaires and billionaire corporations have poured hundreds of millions into Black Lives Matter and connected groups and promoted them to a global audience. None of this is motivated by caring about black people. These are the billionaires that have controlled and exploited a system that leaves millions of black people in abject poverty and deprivation which they do absolutely nothing to address. The same Cult networks funding BLM were behind the *slave trade*! Black Lives Matter hijacked a phrase that few would challenge and they have turned this laudable concept into a political weapon to divide society. You know that BLM is a fraud when it claims that *All Lives Matter*, the most inclusive statement of all, is 'racist'. BLM and its Cult masters don't want to end racism. To them it's a means to an end to control all of humanity never mind the colour, creed, culture or background. What has destroying the nuclear family got to do with ending racism? Nothing – but that is one of the goals of BLM and also happens to be a goal of the Cult as I have been exposing in my books for decades. Stealing children from loving parents and giving schools ever more power to override parents is part of that same agenda. BLM is a Marxist organisation and why would that not be the case when the Cult created Marxism *and* BLM? Patrisse Cullors, a BLM co-founder, said in a 2015 video that she and her fellow organisers, including co-founder Alicia Garza, are 'trained Marxists'. The lady known after marriage as Patrisse Khan-Cullors bought a \$1.4 million home in 2021 in one of the whitest areas of California with a black population of just 1.6 per cent and has so far bought *four* high-end homes for a total of \$3.2 million. How very Marxist. There must be a bit of spare in the BLM coffers, however, when Cult corporations and billionaires have handed over the best part of \$100 million. Many black people can see that Black Lives Matter is not

working for them, but against them, and this is still more confirmation. Black journalist Jason Whitlock, who had his account suspended by Twitter for simply linking to the story about the 'Marxist's' home buying spree, said that BLM leaders are 'making millions of dollars off the backs of these dead black men who they wouldn't spit on if they were on fire and alive'.

Black Lies Matter

Cult assets and agencies came together to promote BLM in the wake of the death of career criminal George Floyd who had been jailed a number of times including for forcing his way into the home of a black woman with others in a raid in which a gun was pointed at her stomach. Floyd was filmed being held in a Minneapolis street in 2020 with the knee of a police officer on his neck and he subsequently died. It was an appalling thing for the officer to do, but the same technique has been used by police on peaceful protestors of lockdown without any outcry from the Woke brigade. As unquestioning supporters of the Cult agenda Wokers have supported lockdown and all the 'Covid' claptrap while attacking anyone standing up to the tyranny imposed in its name. Court documents would later include details of an autopsy on Floyd by County Medical Examiner Dr Andrew Baker who concluded that Floyd had taken a fatal level of the drug fentanyl. None of this mattered to fact-free, question-free, Woke. Floyd's death was followed by worldwide protests against police brutality amid calls to defund the police. Throwing babies out with the bathwater is a Woke speciality. In the wake of the murder of British woman Sarah Everard a Green Party member of the House of Lords, Baroness Jones of Moulsecoomb (Nincompoopia would have been better), called for a 6pm curfew for all men. This would be in breach of the Geneva Conventions on war crimes which ban collective punishment, but that would never have crossed the black and white Woke mind of Baroness Nincompoopia who would have been far too convinced of her own self-righteousness to compute such details. Many American cities did defund the police in the face of Floyd riots

and after \$15 million was deleted from the police budget in Washington DC under useless Woke mayor Muriel Bowser car-jacking alone rose by 300 percent and within six months the US capital recorded its highest murder rate in 15 years. The same happened in Chicago and other cities in line with the Cult/Soros plan to bring fear to streets and neighbourhoods by reducing the police, releasing violent criminals and not prosecuting crime. This is the mob-rule agenda that I have warned in the books was coming for so long. Shootings in the area of Minneapolis where Floyd was arrested increased by 2,500 percent compared with the year before. Defunding the police over George Floyd has led to a big increase in dead people with many of them black. Police protection for politicians making these decisions stayed the same or increased as you would expect from professional hypocrites. The Cult doesn't actually want to abolish the police. It wants to abolish local control over the police and hand it to federal government as the psychopaths advance the Hunger Games Society. Many George Floyd protests turned into violent riots with black stores and businesses destroyed by fire and looting across America fuelled by Black Lives Matter. Woke doesn't do irony. If you want civil rights you must loot the liquor store and the supermarket and make off with a smart TV. It's the only way.

It's not a race war – it's a class war

Black people are patronised by privileged blacks and whites alike and told they are victims of white supremacy. I find it extraordinary to watch privileged blacks supporting the very system and bloodline networks behind the slave trade and parroting the same Cult-serving manipulative crap of their privileged white, often billionaire, associates. It is indeed not a race war but a class war and colour is just a diversion. Black Senator Cory Booker and black Congresswoman Maxine Waters, more residents of Nincompoopia, personify this. Once you tell people they are victims of someone else you devalue both their own responsibility for their plight and the power they have to impact on their reality and experience. Instead

we have: 'You are only in your situation because of whiteness – turn on them and everything will change.' It won't change. Nothing changes in our lives unless *we* change it. Crucial to that is never seeing yourself as a victim and always as the creator of your reality. Life is a simple sequence of choice and consequence. Make different choices and you create different consequences. *You* have to make those choices – not Black Lives Matter, the Woke Mafia and anyone else that seeks to dictate your life. Who are they these Wokers, an emotional and psychological road traffic accident, to tell you what to do? Personal empowerment is the last thing the Cult and its Black Lives Matter want black people or anyone else to have. They claim to be defending the underdog while *creating* and perpetuating the underdog. The Cult's worst nightmare is human unity and if they are going to keep blacks, whites and every other race under economic servitude and control then the focus must be diverted from what they have in common to what they can be manipulated to believe divides them. Blacks have to be told that their poverty and plight is the fault of the white bloke living on the street in the same poverty and with the same plight they are experiencing. The difference is that your plight black people is due to him, a white supremacist with 'white privilege' living on the street. Don't unite as one human family against your mutual oppressors and suppressors – fight the oppressor with the white face who is as financially deprived as you are. The Cult knows that as its 'Covid' agenda moves into still new levels of extremism people are going to respond and it has been spreading the seeds of disunity everywhere to stop a united response to the evil that targets *all of us*.

Racist attacks on 'whiteness' are getting ever more outrageous and especially through the American Democratic Party which has an appalling history for anti-black racism. Barack Obama, Joe Biden, Hillary Clinton and Nancy Pelosi all eulogised about Senator Robert Byrd at his funeral in 2010 after a nearly 60-year career in Congress. Byrd was a brutal Ku Klux Klan racist and a violent abuser of Cathy O'Brien in MKUltra. He said he would never fight in the military 'with a negro by my side' and 'rather I should die a thousand times,

and see Old Glory trampled in the dirt never to rise again, than to see this beloved land of ours become degraded by race mongrels, a throwback to the blackest specimen from the wilds'. Biden called Byrd a 'very close friend and mentor'. These 'Woke' hypocrites are not anti-racist they are anti-poor and anti-people not of their perceived class. Here is an illustration of the scale of anti-white racism to which we have now descended. Seriously Woke and moronic *New York Times* contributor Damon Young described whiteness as a 'virus' that 'like other viruses will not die until there are no bodies left for it to infect'. He went on: '... the only way to stop it is to locate it, isolate it, extract it, and kill it.' Young can say that as a black man with no consequences when a white man saying the same in reverse would be facing a jail sentence. *That's* racism. We had super-Woke numbskull senators Tammy Duckworth and Mazie Hirono saying they would object to future Biden Cabinet appointments if he did not nominate more Asian Americans and Pacific Islanders. Never mind the ability of the candidate what do they look like? Duckworth said: 'I will vote for racial minorities and I will vote for LGBTQ, but anyone else I'm not voting for.' Appointing people on the grounds of race is illegal, but that was not a problem for this ludicrous pair. They were on-message and that's a free pass in any situation.

Critical race racism

White children are told at school they are intrinsically racist as they are taught the divisive 'critical race theory'. This claims that the law and legal institutions are inherently racist and that race is a socially constructed concept used by white people to further their economic and political interests at the expense of people of colour. White is a 'virus' as we've seen. Racial inequality results from 'social, economic, and legal differences that white people create between races to maintain white interests which leads to poverty and criminality in minority communities'. I must tell that to the white guy sleeping on the street. The principal of East Side Community School in New York sent white parents a manifesto that called on

them to become 'white traitors' and advocate for full 'white abolition'. These people are teaching your kids when they urgently need a psychiatrist. The 'school' included a chart with 'eight white identities' that ranged from 'white supremacist' to 'white abolition' and defined the behaviour white people must follow to end 'the regime of whiteness'. Woke blacks and their privileged white associates are acting exactly like the slave owners of old and Ku Klux Klan racists like Robert Byrd. They are too full of their own self-purity to see that, but it's true. Racism is not a body type; it's a state of mind that can manifest through any colour, creed or culture.

Another racial fraud is '*equity*'. Not equality of treatment and opportunity – equity. It's a term spun as equality when it means something very different. Equality in its true sense is a raising up while 'equity' is a race to the bottom. Everyone in the same level of poverty is 'equity'. Keep everyone down – that's equity. The Cult doesn't want anyone in the human family to be empowered and BLM leaders, like all these 'anti-racist' organisations, continue their privileged, pampered existence by perpetuating the perception of gathering racism. When is the last time you heard an 'anti-racist' or 'anti-Semitism' organisation say that acts of racism and discrimination have *fallen*? It's not in the interests of their fundraising and power to influence and the same goes for the professional soccer anti-racism operation, Kick It Out. Two things confirmed that the Black Lives Matter riots in the summer of 2020 were Cult creations. One was that while anti-lockdown protests were condemned in this same period for 'transmitting 'Covid' the authorities supported mass gatherings of Black Lives Matter supporters. I even saw self-deluding people claiming to be doctors say the two types of protest were not the same. No – the non-existent 'Covid' was in favour of lockdowns and attacked those that protested against them while 'Covid' supported Black Lives Matter and kept well away from its protests. The whole thing was a joke and as lockdown protestors were arrested, often brutally, by reframed Face-Nappies we had the grotesque sight of police officers taking the knee to Black Lives Matter, a Cult-funded Marxist

organisation that supports violent riots and wants to destroy the nuclear family and white people.

He's not white? Shucks!

Woke obsession with race was on display again when ten people were shot dead in Boulder, Colorado, in March, 2021. Cult-owned Woke TV channels like CNN said the shooter appeared to be a white man and Wokers were on Twitter condemning 'violent white men' with the usual mantras. Then the shooter's name was released as Ahmad Al Aliwi Alissa, an anti-Trump Arab-American, and the sigh of disappointment could be heard five miles away. Never mind that ten people were dead and what that meant for their families. Race baiting was all that mattered to these sick Cult-serving people like Barack Obama who exploited the deaths to further divide America on racial grounds which is his job for the Cult. This is the man that 'racist' white Americans made the first black president of the United States and then gave him a second term. Not-very-bright Obama has become filthy rich on the back of that and today appears to have a big influence on the Biden administration. Even so he's still a downtrodden black man and a victim of white supremacy. This disingenuous fraud reveals the contempt he has for black people when he puts on a Deep South Alabama accent whenever he talks to them, no, *at* them.

Another BLM red flag was how the now fully-Woke (fully-Cult) and fully-virtue-signalled professional soccer authorities had their teams taking the knee before every match in support of Marxist Black Lives Matter. Soccer authorities and clubs displayed 'Black Lives Matter' on the players' shirts and flashed the name on electronic billboards around the pitch. Any fans that condemned what is a Freemasonic taking-the-knee ritual were widely condemned as you would expect from the Woke virtue-signallers of professional sport and the now fully-Woke media. We have reverse racism in which you are banned from criticising any race or culture except for white people for whom anything goes – say what you like, no problem. What has this got to do with racial harmony and

equality? We've had black supremacists from Black Lives Matter telling white people to fall to their knees in the street and apologise for their white supremacy. Black supremacists acting like white supremacist slave owners of the past couldn't breach their self-obsessed, race-obsessed sense of self-purity. Joe Biden appointed a race-obsessed black supremacist Kristen Clarke to head the Justice Department Civil Rights Division. Clarke claimed that blacks are endowed with 'greater mental, physical and spiritual abilities' than whites. If anyone reversed that statement they would be vilified. Clarke is on-message so no problem. She's never seen a black-white situation in which the black figure is anything but a virtuous victim and she heads the Civil Rights Division which should treat everyone the same or it isn't civil rights. Another perception of the Renegade Mind: If something or someone is part of the Cult agenda they will be supported by Woke governments and media no matter what. If they're not, they will be condemned and censored. It really is that simple and so racist Clarke prospers despite (make that because of) her racism.

The end of culture

Biden's administration is full of such racial, cultural and economic bias as the Cult requires the human family to be divided into warring factions. We are now seeing racially-segregated graduations and everything, but everything, is defined through the lens of perceived 'racism'. We have 'racist' mathematics, 'racist' food and even 'racist' *plants*. World famous Kew Gardens in London said it was changing labels on plants and flowers to tell its pre-'Covid' more than two million visitors a year how racist they are. Kew director Richard Deverell said this was part of an effort to 'move quickly to decolonise collections' after they were approached by one Ajay Chhabra 'an actor with an insight into how sugar cane was linked to slavery'. They are *plants* you idiots. 'Decolonisation' in the Woke manual really means colonisation of society with its mentality and by extension colonisation by the Cult. We are witnessing a new Chinese-style 'Cultural Revolution' so essential to the success of all

Marxist takeovers. Our cultural past and traditions have to be swept away to allow a new culture to be built-back-better. Woke targeting of long-standing Western cultural pillars including historical monuments and cancelling of historical figures is what happened in the Mao revolution in China which 'purged remnants of capitalist and traditional elements from Chinese society' and installed Maoism as the dominant ideology'. For China see the Western world today and for 'dominant ideology' see Woke. Better still see Marxism or Maoism. The 'Covid' hoax has specifically sought to destroy the arts and all elements of Western culture from people meeting in a pub or restaurant to closing theatres, music venues, sports stadiums, places of worship and even banning *singing*. Destruction of Western society is also why criticism of any religion is banned except for Christianity which again is the dominant religion as white is the numerically-dominant race. Christianity may be fading rapidly, but its history and traditions are weaved through the fabric of Western society. Delete the pillars and other structures will follow until the whole thing collapses. I am not a Christian defending that religion when I say that. I have no religion. It's just a fact. To this end Christianity has itself been turned Woke to usher its own downfall and its ranks are awash with 'change agents' – knowing and unknowing – at every level including Pope Francis (*definitely* knowing) and the clueless Archbishop of Canterbury Justin Welby (possibly not, but who can be sure?). Woke seeks to coordinate attacks on Western culture, traditions, and ways of life through 'intersectionality' defined as 'the complex, cumulative way in which the effects of multiple forms of discrimination (such as racism, sexism, and classism) combine, overlap, or intersect especially in the experiences of marginalised individuals or groups'. Wade through the Orwellian Woke-speak and this means coordinating disparate groups in a common cause to overthrow freedom and liberal values.

The entire structure of public institutions has been infested with Woke – government at all levels, political parties, police, military, schools, universities, advertising, media and trade unions. This abomination has been achieved through the Cult web by appointing

Wokers to positions of power and battering non-Wokers into line through intimidation, isolation and threats to their job. Many have been fired in the wake of the empathy-deleted, vicious hostility of 'social justice' Wokers and the desire of gutless, spineless employers to virtue-signal their Wokeness. Corporations are filled with Wokers today, most notably those in Silicon Valley. Ironically at the top they are not Woke at all. They are only exploiting the mentality their Cult masters have created and funded to censor and enslave while the Wokers cheer them on until it's their turn. Thus the Woke 'liberal left' is an inversion of the traditional liberal left. Campaigning for justice on the grounds of power and wealth distribution has been replaced by campaigning for identity politics. The genuine traditional left would never have taken money from today's billionaire abusers of fairness and justice and nor would the billionaires have wanted to fund that genuine left. It would not have been in their interests to do so. The division of opinion in those days was between the haves and have nots. This all changed with Cult manipulated and funded identity politics. The division of opinion today is between Wokers and non-Wokers and not income brackets. Cult corporations and their billionaires may have taken wealth disparity to cataclysmic levels of injustice, but as long as they speak the language of Woke, hand out the dosh to the Woke network and censor the enemy they are 'one of us'. Billionaires who don't give a damn about injustice are laughing at them till their bellies hurt. Wokers are not even close to self-aware enough to see that. The transformed 'left' dynamic means that Wokers who drone on about 'social justice' are funded by billionaires that have destroyed social justice the world over. It's *why* they are billionaires.

The climate con

Nothing encapsulates what I have said more comprehensively than the hoax of human-caused global warming. I have detailed in my books over the years how Cult operatives and organisations were the pump-primers from the start of the climate con. A purpose-built vehicle for this is the Club of Rome established by the Cult in 1968

with the Rockefellers and Rothschilds centrally involved all along. Their gofer frontman Maurice Strong, a Canadian oil millionaire, hosted the Earth Summit in Rio de Janeiro, Brazil, in 1992 where the global 'green movement' really expanded in earnest under the guiding hand of the Cult. The Earth Summit established Agenda 21 through the Cult-created-and-owned United Nations to use the illusion of human-caused climate change to justify the transformation of global society to save the world from climate disaster. It is a No-Problem-Reaction-Solution sold through governments, media, schools and universities as whole generations have been terrified into believing that the world was going to end in their lifetimes unless what old people had inflicted upon them was stopped by a complete restructuring of how everything is done. Chill, kids, it's all a hoax. Such restructuring is precisely what the Cult agenda demands (purely by coincidence of course). Today this has been given the codename of the Great Reset which is only an updated term for Agenda 21 and its associated Agenda 2030. The latter, too, is administered through the UN and was voted into being by the General Assembly in 2015. Both 21 and 2030 seek centralised control of all resources and food right down to the raindrops falling on your own land. These are some of the demands of Agenda 21 established in 1992. See if you recognise this society emerging today:

- End national sovereignty
- State planning and management of all land resources, ecosystems, deserts, forests, mountains, oceans and fresh water; agriculture; rural development; biotechnology; and ensuring '*equity*'
- The state to 'define the role' of business and financial resources
- Abolition of private property
- 'Restructuring' the family unit (see BLM)
- Children raised by the state
- People told what their job will be
- Major restrictions on movement
- Creation of 'human settlement zones'

- Mass resettlement as people are forced to vacate land where they live
- Dumbing down education
- Mass global depopulation in pursuit of all the above

The United Nations was created as a Trojan horse for world government. With the climate con of critical importance to promoting that outcome you would expect the UN to be involved. Oh, it's involved all right. The UN is promoting Agenda 21 and Agenda 2030 justified by 'climate change' while also driving the climate hoax through its Intergovernmental Panel on Climate Change (IPCC), one of the world's most corrupt organisations. The IPCC has been lying ferociously and constantly since the day it opened its doors with the global media hanging unquestioningly on its every mendacious word. The Green movement is entirely Woke and has long lost its original environmental focus since it was co-opted by the Cult. An obsession with 'global warming' has deleted its values and scrambled its head. I experienced a small example of what I mean on a beautiful country walk that I have enjoyed several times a week for many years. The path merged into the fields and forests and you felt at one with the natural world. Then a 'Green' organisation, the Hampshire and Isle of Wight Wildlife Trust, took over part of the land and proceeded to cut down a large number of trees, including mature ones, to install a horrible big, bright steel 'this-is-ours-stay-out' fence that destroyed the whole atmosphere of this beautiful place. No one with a feel for nature would do that. Day after day I walked to the sound of chainsaws and a magnificent mature weeping willow tree that I so admired was cut down at the base of the trunk. When I challenged a Woke young girl in a green shirt (of course) about this vandalism she replied: 'It's a weeping willow – it will grow back.' This is what people are paying for when they donate to the Hampshire and Isle of Wight Wildlife Trust and many other 'green' organisations today. It is not the environmental movement that I knew and instead has become a support-system – as with Extinction Rebellion – for a very dark agenda.

Private jets for climate justice

The Cult-owned, Gates-funded, World Economic Forum and its founder Klaus Schwab were behind the emergence of Greta Thunberg to harness the young behind the climate agenda and she was invited to speak to the world at ... the UN. Schwab published a book, *Covid-19: The Great Reset* in 2020 in which he used the 'Covid' hoax and the climate hoax to lay out a new society straight out of Agenda 21 and Agenda 2030. Bill Gates followed in early 2021 when he took time out from destroying the world to produce a book in his name about the way to save it. Gates flies across the world in private jets and admitted that 'I probably have one of the highest greenhouse gas footprints of anyone on the planet ... my personal flying alone is gigantic.' He has also bid for the planet's biggest private jet operator. Other climate change saviours who fly in private jets include John Kerry, the US Special Presidential Envoy for Climate, and actor Leonardo DiCaprio, a 'UN Messenger of Peace with special focus on climate change'. These people are so full of bullshit they could corner the market in manure. We mustn't be sceptical, though, because the Gates book, *How to Avoid a Climate Disaster: The Solutions We Have and the Breakthroughs We Need*, is a genuine attempt to protect the world and not an obvious pile of excrement attributed to a mega-psychopath aimed at selling his masters' plans for humanity. The Gates book and the other shite-pile by Klaus Schwab could have been written by the same person and may well have been. Both use 'climate change' and 'Covid' as the excuses for their new society and by coincidence the Cult's World Economic Forum and Bill and Melinda Gates Foundation promote the climate hoax and hosted Event 201 which pre-empted with a 'simulation' the very 'coronavirus' hoax that would be simulated for real on humanity within weeks. The British 'royal' family is promoting the 'Reset' as you would expect through Prince 'climate change caused the war in Syria' Charles and his hapless son Prince William who said that we must 'reset our relationship with nature and our trajectory as a species' to avoid a climate disaster. Amazing how many promoters of the 'Covid' and 'climate change' control

systems are connected to Gates and the World Economic Forum. A 'study' in early 2021 claimed that carbon dioxide emissions must fall by the equivalent of a global lockdown roughly every two years for the next decade to save the planet. The 'study' appeared in the same period that the Schwab mob claimed in a video that lockdowns destroying the lives of billions are good because they make the earth 'quieter' with less 'ambient noise'. They took down the video amid a public backlash for such arrogant, empathy-deleted stupidity. You see, however, where they are going with this. Corinne Le Quéré, a professor at the Tyndall Centre for Climate Change Research, University of East Anglia, was lead author of the climate lockdown study, and she writes for ... the World Economic Forum. Gates calls in 'his' book for changing 'every aspect of the economy' (long-time Cult agenda) and for humans to eat synthetic 'meat' (predicted in my books) while cows and other farm animals are eliminated. Australian TV host and commentator Alan Jones described what carbon emission targets would mean for farm animals in Australia alone if emissions were reduced as demanded by 35 percent by 2030 and zero by 2050:

Well, let's take agriculture, the total emissions from agriculture are about 75 million tonnes of carbon dioxide, equivalent. Now reduce that by 35 percent and you have to come down to 50 million tonnes, I've done the maths. So if you take for example 1.5 million cows, you're going to have to reduce the herd by 525,000 [by] 2030, nine years, that's 58,000 cows a year. The beef herd's 30 million, reduce that by 35 percent, that's 10.5 million, which means 1.2 million cattle have to go every year between now and 2030. This is insanity!

There are 75 million sheep. Reduce that by 35 percent, that's 26 million sheep, that's almost 3 million a year. So under the Paris Agreement over 30 million beasts, dairy cows, cattle, pigs and sheep would go. More than 8,000 every minute of every hour for the next decade, do these people know what they're talking about?

Clearly they don't at the level of campaigners, politicians and administrators. The Cult *does* know; that's the outcome it wants. We are faced with not just a war on humanity. Animals and the natural world are being targeted and I have been saying since the 'Covid' hoax began that the plan eventually was to claim that the 'deadly virus' is able to jump from animals, including farm animals and

domestic pets, to humans. Just before this book went into production came this story: 'Russia registers world's first Covid-19 vaccine for cats & dogs as makers of Sputnik V warn pets & farm animals could spread virus'. The report said 'top scientists warned that the deadly pathogen could soon begin spreading through homes and farms' and 'the next stage is the infection of farm and domestic animals'. Know the outcome and you'll see the journey. Think what that would mean for animals and keep your eye on a term called zoonosis or zoonotic diseases which transmit between animals and humans. The Cult wants to break the connection between animals and people as it does between people and people. Farm animals fit with the Cult agenda to transform food from natural to synthetic.

The gas of life is killing us

There can be few greater examples of Cult inversion than the condemnation of carbon dioxide as a dangerous pollutant when it is the gas of life. Without it the natural world would be dead and so we would all be dead. We breathe in oxygen and breathe out carbon dioxide while plants produce oxygen and absorb carbon dioxide. It is a perfect symbiotic relationship that the Cult wants to dismantle for reasons I will come to in the final two chapters. Gates, Schwab, other Cult operatives and mindless repeaters, want the world to be 'carbon neutral' by at least 2050 and the earlier the better. 'Zero carbon' is the cry echoed by lunatics calling for 'Zero Covid' when we already have it. These carbon emission targets will deindustrialise the world in accordance with Cult plans – the post-industrial, post-democratic society – and with so-called renewables like solar and wind not coming even close to meeting human energy needs blackouts and cold are inevitable. Texans got the picture in the winter of 2021 when a snow storm stopped wind turbines and solar panels from working and the lights went down along with water which relies on electricity for its supply system. Gates wants everything to be powered by electricity to ensure that his masters have the kill switch to stop all human activity, movement, cooking, water and warmth any time they like. The climate lie is so

stupendously inverted that it claims we must urgently reduce carbon dioxide when we *don't have enough*.

Co2 in the atmosphere is a little above 400 parts per million when the optimum for plant growth is 2,000 ppm and when it falls anywhere near 150 ppm the natural world starts to die and so do we. It fell to as low as 280 ppm in an 1880 measurement in Hawaii and rose to 413 ppm in 2019 with industrialisation which is why the planet has become *greener* in the industrial period. How insane then that psychopathic madman Gates is not satisfied only with blocking the rise of Co2. He's funding technology to suck it out of the atmosphere. The reason why will become clear. The industrial era is not destroying the world through Co2 and has instead turned around a potentially disastrous ongoing fall in Co2. Greenpeace co-founder and scientist Patrick Moore walked away from Greenpeace in 1986 and has exposed the green movement for fear-mongering and lies. He said that 500 million years ago there was *17 times* more Co2 in the atmosphere than we have today and levels have been falling for hundreds of millions of years. In the last 150 million years Co2 levels in Earth's atmosphere had reduced by *90 percent*. Moore said that by the time humanity began to unlock carbon dioxide from fossil fuels we were at '38 seconds to midnight' and in that sense: 'Humans are [the Earth's] salvation.' Moore made the point that only half the Co2 emitted by fossil fuels stays in the atmosphere and we should remember that all pollution pouring from chimneys that we are told is carbon dioxide is in fact nothing of the kind. It's pollution. Carbon dioxide is an invisible gas.

William Happer, Professor of Physics at Princeton University and long-time government adviser on climate, has emphasised the Co2 deficiency for maximum growth and food production. Greenhouse growers don't add carbon dioxide for a bit of fun. He said that most of the warming in the last 100 years, after the earth emerged from the super-cold period of the 'Little Ice Age' into a natural warming cycle, was over by 1940. Happer said that a peak year for warming in 1988 can be explained by a 'monster El Nino' which is a natural and cyclical warming of the Pacific that has nothing to do with 'climate

change'. He said the effect of Co2 could be compared to painting a wall with red paint in that once two or three coats have been applied it didn't matter how much more you slapped on because the wall will not get much redder. Almost all the effect of the rise in Co2 has already happened, he said, and the volume in the atmosphere would now have to *double* to increase temperature by a single degree. Climate hoaxers know this and they have invented the most ridiculously complicated series of 'feedback' loops to try to overcome this rather devastating fact. You hear puppet Greta going on cluelessly about feedback loops and this is why.

The Sun affects temperature? No you *climate denier*

Some other nonsense to contemplate: Climate graphs show that rises in temperature do not follow rises in Co2 – *it's the other way round* with a lag between the two of some 800 years. If we go back 800 years from present time we hit the Medieval Warm Period when temperatures were higher than now without any industrialisation and this was followed by the Little Ice Age when temperatures plummeted. The world was still emerging from these centuries of serious cold when many climate records began which makes the ever-repeated line of the 'hottest year since records began' meaningless when you are not comparing like with like. The coldest period of the Little Ice Age corresponded with the lowest period of sunspot activity when the Sun was at its least active. Proper scientists will not be at all surprised by this when it confirms the obvious fact that earth temperature is affected by the scale of Sun activity and the energetic power that it subsequently emits; but when is the last time you heard a climate hoaxer talking about the Sun as a source of earth temperature?? Everything has to be focussed on Co2 which makes up just 0.117 percent of so-called greenhouse gases and only a fraction of even that is generated by human activity. The rest is natural. More than 90 percent of those greenhouse gases are water vapour and clouds ([Fig 9](#)). Ban moisture I say. Have you noticed that the climate hoaxers no longer use the polar bear as their promotion image? That's because far from becoming extinct polar

bear communities are stable or thriving. Joe Bastardi, American meteorologist, weather forecaster and outspoken critic of the climate lie, documents in his book *The Climate Chronicles* how weather patterns and events claimed to be evidence of climate change have been happening since long before industrialisation: 'What happened before naturally is happening again, as is to be expected given the cyclical nature of the climate due to the design of the planet.' If you read the detailed background to the climate hoax in my other books you will shake your head and wonder how anyone could believe the crap which has spawned a multi-trillion dollar industry based on absolute garbage (see HIV causes AIDs and Sars-Cov-2 causes 'Covid-19'). Climate and 'Covid' have much in common given they have the same source. They both have the contradictory *everything* factor in which everything is explained by reference to them. It's hot – 'it's climate change'. It's cold – 'it's climate change'. I got a sniffle – 'it's Covid'. I haven't got a sniffle – 'it's Covid'. Not having a sniffle has to be a symptom of 'Covid'. Everything is and not having a sniffle is especially dangerous if you are a slow walker. For sheer audacity I offer you a Cambridge University 'study' that actually linked 'Covid' to 'climate change'. It had to happen eventually. They concluded that climate change played a role in 'Covid-19' spreading from animals to humans because ... wait for it ... I kid you not ... *the two groups were forced closer together as populations grow*. Er, that's it. The whole foundation on which this depended was that 'Bats are the likely zoonotic origin of SARS-CoV-1 and SARS-CoV-2'. Well, they are not. They are nothing to do with it. Apart from bats not being the origin and therefore 'climate change' effects on bats being irrelevant I am in awe of their academic insight. Where would we be without them? Not where we are that's for sure.

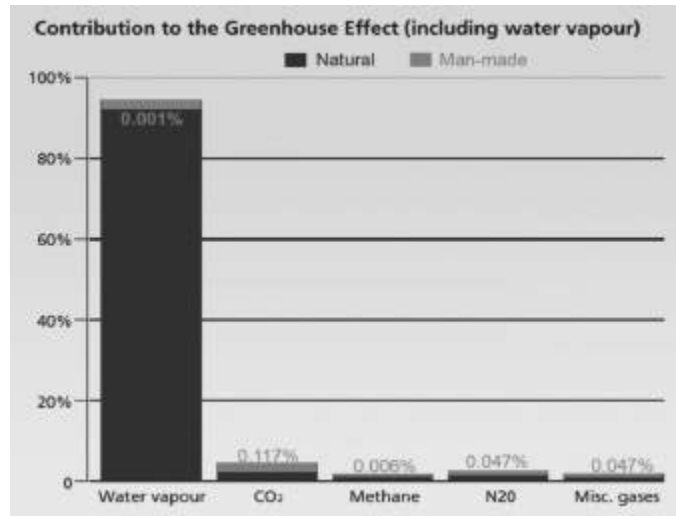


Figure 9: The idea that the gas of life is disastrously changing the climate is an insult to brain cell activity.

One other point about the weather is that climate modification is now well advanced and not every major weather event is natural – or earthquake come to that. I cover this subject at some length in other books. China is openly planning a rapid expansion of its weather modification programme which includes changing the climate in an area more than one and a half times the size of India. China used weather manipulation to ensure clear skies during the 2008 Olympics in Beijing. I have quoted from US military documents detailing how to employ weather manipulation as a weapon of war and they did that in the 1960s and 70s during the conflict in Vietnam with Operation Popeye manipulating monsoon rains for military purposes. Why would there be international treaties on weather modification if it wasn't possible? Of course it is. Weather is energetic information and it can be changed.

How was the climate hoax pulled off? See 'Covid'

If you can get billions to believe in a 'virus' that doesn't exist you can get them to believe in human-caused climate change that doesn't exist. Both are being used by the Cult to transform global society in the way it has long planned. Both hoaxes have been achieved in pretty much the same way. First you declare a lie is a fact. There's a

'virus' you call SARS-Cov-2 or humans are warming the planet with their behaviour. Next this becomes, via Cult networks, the foundation of government, academic and science policy and belief. Those who parrot the mantra are given big grants to produce research that confirms the narrative is true and ever more 'symptoms' are added to make the 'virus'/'climate change' sound even more scary. Scientists and researchers who challenge the narrative have their grants withdrawn and their careers destroyed. The media promote the lie as the unquestionable truth and censor those with an alternative view or evidence. A great percentage of the population believe what they are told as the lie becomes an everybody-knows-that and the believing-masses turn on those with a mind of their own. The technique has been used endlessly throughout human history. Wokers are the biggest promoters of the climate lie *and* 'Covid' fascism because their minds are owned by the Cult; their sense of self-righteous self-purity knows no bounds; and they exist in a bubble of reality in which facts are irrelevant and only get in the way of looking without seeing.

Running through all of this like veins in a blue cheese is control of information, which means control of perception, which means control of behaviour, which collectively means control of human society. The Cult owns the global media and Silicon Valley fascists for the simple reason that it *has* to. Without control of information it can't control perception and through that human society. Examine every facet of the Cult agenda and you will see that anything supporting its introduction is never censored while anything pushing back is always censored. I say again: Psychopaths that know why they are doing this must go before Nuremberg trials and those that follow their orders must trot along behind them into the same dock. 'I was just following orders' didn't work the first time and it must not work now. Nuremberg trials must be held all over the world before public juries for politicians, government officials, police, compliant doctors, scientists and virologists, and all Cult operatives such as Gates, Tedros, Fauci, Vallance, Whitty, Ferguson, Zuckerberg, Wojcicki, Brin, Page, Dorsey, the whole damn lot of

them – including, no *especially*, the psychopath psychologists. Without them and the brainless, gutless excuses for journalists that have repeated their lies, none of this could be happening. Nobody can be allowed to escape justice for the psychological and economic Armageddon they are all responsible for visiting upon the human race.

As for the compliant, unquestioning, swathes of humanity, and the self-obsessed, all-knowing ignorance of the Wokers ... don't start me. God help their kids. God help their grandkids. God *help them*.

CHAPTER NINE

We must have it? So what is it?

*Well I won't back down. No, I won't back down. You can stand me
up at the Gates of Hell. But I won't back down*

Tom Petty

I will now focus on the genetically-manipulating 'Covid vaccines' which do not meet this official definition of a vaccine by the US Centers for Disease Control (CDC): 'A product that stimulates a person's immune system to produce immunity to a specific disease, protecting the person from that disease.' On that basis 'Covid vaccines' are not a vaccine in that the makers don't even claim they stop infection or transmission.

They are instead part of a multi-levelled conspiracy to change the nature of the human body and what it means to be 'human' and to depopulate an enormous swathe of humanity. What I shall call Human 1.0 is on the cusp of becoming Human 2.0 and for very sinister reasons. Before I get to the 'Covid vaccine' in detail here's some background to vaccines in general. Government regulators do not test vaccines – the makers do – and the makers control which data is revealed and which isn't. Children in America are given 50 vaccine doses by age six and 69 by age 19 and the effect of the whole combined schedule has never been tested. Autoimmune diseases when the immune system attacks its own body have soared in the mass vaccine era and so has disease in general in children and the young. Why wouldn't this be the case when vaccines target the *immune system*? The US government gave Big Pharma drug

companies immunity from prosecution for vaccine death and injury in the 1986 National Childhood Vaccine Injury Act (NCVIA) and since then the government (taxpayer) has been funding compensation for the consequences of Big Pharma vaccines. The criminal and satanic drug giants can't lose and the vaccine schedule has increased dramatically since 1986 for this reason. There is no incentive to make vaccines safe and a big incentive to make money by introducing ever more. Even against a ridiculously high bar to prove vaccine liability, and with the government controlling the hearing in which it is being challenged for compensation, the vaccine court has so far paid out more than \$4 billion. These are the vaccines we are told are safe and psychopaths like Zuckerberg censor posts saying otherwise. The immunity law was even justified by a ruling that vaccines by their nature were 'unavoidably unsafe'.

Check out the ingredients of vaccines and you will be shocked if you are new to this. *They put that in children's bodies?? What??* Try aluminium, a brain toxin connected to dementia, aborted foetal tissue and formaldehyde which is used to embalm corpses. World-renowned aluminium expert Christopher Exley had his research into the health effect of aluminium in vaccines shut down by Keele University in the UK when it began taking funding from the Bill and Melinda Gates Foundation. Research when diseases 'eradicated' by vaccines began to decline and you will find the fall began long *before* the vaccine was introduced. Sometimes the fall even plateaued after the vaccine. Diseases like scarlet fever for which there was no vaccine declined in the same way because of environmental and other factors. A perfect case in point is the polio vaccine. Polio began when lead arsenate was first sprayed as an insecticide and residues remained in food products. Spraying started in 1892 and the first US polio epidemic came in Vermont in 1894. The simple answer was to stop spraying, but Rockefeller-created Big Pharma had a better idea. Polio was decreed to be caused by the *poliovirus* which 'spreads from person to person and can infect a person's spinal cord'. Lead arsenate was replaced by the lethal DDT which had the same effect of causing paralysis by damaging the brain and central nervous

system. Polio plummeted when DDT was reduced and then banned, but the vaccine is still given the credit for something it didn't do. Today by far the biggest cause of polio is the vaccines promoted by Bill Gates. Vaccine justice campaigner Robert Kennedy Jr, son of assassinated (by the Cult) US Attorney General Robert Kennedy, wrote:

In 2017, the World Health Organization (WHO) reluctantly admitted that the global explosion in polio is predominantly vaccine strain. The most frightening epidemics in Congo, Afghanistan, and the Philippines, are all linked to vaccines. In fact, by 2018, 70% of global polio cases were vaccine strain.

Vaccines make fortunes for Cult-owned Gates and Big Pharma while undermining the health and immune systems of the population. We had a glimpse of the mentality behind the Big Pharma cartel with a report on WION (World is One News), an international English language TV station based in India, which exposed the extraordinary behaviour of US drug company Pfizer over its 'Covid vaccine'. The WION report told how Pfizer had made fantastic demands of Argentina, Brazil and other countries in return for its 'vaccine'. These included immunity from prosecution, even for Pfizer negligence, government insurance to protect Pfizer from law suits and handing over as collateral sovereign assets of the country to include Argentina's bank reserves, military bases and embassy buildings. Pfizer demanded the same of Brazil in the form of waiving sovereignty of its assets abroad; exempting Pfizer from Brazilian laws; and giving Pfizer immunity from all civil liability. This is a 'vaccine' developed with government funding. Big Pharma is evil incarnate as a creation of the Cult and all must be handed tickets to Nuremberg.

Phantom 'vaccine' for a phantom 'disease'

I'll expose the 'Covid vaccine' fraud and then go on to the wider background of why the Cult has set out to 'vaccinate' every man, woman and child on the planet for an alleged 'new disease' with a survival rate of 99.77 percent (or more) even by the grotesquely-

manipulated figures of the World Health Organization and Johns Hopkins University. The 'infection' to 'death' ratio is 0.23 to 0.15 percent according to Stanford epidemiologist Dr John Ioannidis and while estimates vary the danger remains tiny. I say that if the truth be told the fake infection to fake death ratio is zero. Never mind all the evidence I have presented here and in *The Answer* that there is no 'virus' let us just focus for a moment on that death-rate figure of say 0.23 percent. The figure includes all those worldwide who have tested positive with a test not testing for the 'virus' and then died within 28 days or even longer of any other cause – *any other cause*. Now subtract all those illusory 'Covid' deaths on the global data sheets from the 0.23 percent. What do you think you would be left with? *Zero*. A vaccination has never been successfully developed for a so-called coronavirus. They have all failed at the animal testing stage when they caused hypersensitivity to what they were claiming to protect against and made the impact of a disease far worse. Cult-owned vaccine corporations got around that problem this time by bypassing animal trials, going straight to humans and making the length of the 'trials' before the public rollout as short as they could get away with. Normally it takes five to ten years or more to develop vaccines that still cause demonstrable harm to many people and that's without including the long-term effects that are never officially connected to the vaccination. 'Covid' non-vaccines have been officially produced and approved in a matter of months from a standing start and part of the reason is that (a) they were developed before the 'Covid' hoax began and (b) they are based on computer programs and not natural sources. Official non-trials were so short that government agencies gave *emergency*, not full, approval. 'Trials' were not even completed and full approval cannot be secured until they are. Public 'Covid vaccination' is actually a *continuation of the trial*. Drug company 'trials' are not scheduled to end until 2023 by which time a lot of people are going to be dead. Data on which government agencies gave this emergency approval was supplied by the Big Pharma corporations themselves in the form of Pfizer/BioNTech, AstraZeneca, Moderna, Johnson & Johnson, and

others, and this is the case with all vaccines. By its very nature *emergency* approval means drug companies do not have to prove that the 'vaccine' is 'safe and effective'. How could they with trials way short of complete? Government regulators only have to *believe* that they *could* be safe and effective. It is criminal manipulation to get products in circulation with no testing worth the name. Agencies giving that approval are infested with Big Pharma-connected place-people and they act in the interests of Big Pharma (the Cult) and not the public about whom they do not give a damn.

More human lab rats

'Covid vaccines' produced in record time by Pfizer/BioNTech and Moderna employ a technique *never approved before for use on humans*. They are known as mRNA 'vaccines' and inject a synthetic version of 'viral' mRNA or 'messenger RNA'. The key is in the term 'messenger'. The body works, or doesn't, on the basis of information messaging. Communications are constantly passing between and within the genetic system and the brain. Change those messages and you change the state of the body and even its very nature and you can change psychology and behaviour by the way the brain processes information. I think you are going to see significant changes in personality and perception of many people who have had the 'Covid vaccine' synthetic potions. Insider Aldous Huxley predicted the following in 1961 and mRNA 'vaccines' can be included in the term 'pharmacological methods':

There will be, in the next generation or so, a pharmacological method of making people love their servitude, and producing dictatorship without tears, so to speak, producing a kind of painless concentration camp for entire societies, so that people will in fact have their own liberties taken away from them, but rather enjoy it, because they will be distracted from any desire to rebel by propaganda or brainwashing, or brainwashing enhanced by pharmacological methods. And this seems to be the final revolution.

Apologists claim that mRNA synthetic 'vaccines' don't change the DNA genetic blueprint because RNA does not affect DNA only the other way round. This is so disingenuous. A process called 'reverse

transcription' can convert RNA into DNA and be integrated into DNA in the cell nucleus. This was highlighted in December, 2020, by scientists at Harvard and Massachusetts Institute of Technology (MIT). Geneticists report that more than 40 percent of mammalian genomes results from reverse transcription. On the most basic level if messaging changes then that sequence must lead to changes in DNA which is receiving and transmitting those communications. How can introducing synthetic material into cells not change the cells where DNA is located? The process is known as transfection which is defined as 'a technique to insert foreign nucleic acid (DNA or RNA) into a cell, typically with the intention of altering the properties of the cell'. Researchers at the Sloan Kettering Institute in New York found that changes in messenger RNA can deactivate tumour-suppressing proteins and thereby promote cancer. This is what happens when you mess with messaging. 'Covid vaccine' maker Moderna was founded in 2010 by Canadian stem cell biologist Derrick J. Rossi after his breakthrough discovery in the field of transforming and reprogramming stem cells. These are neutral cells that can be programmed to become any cell including sperm cells. Moderna was therefore founded on the principle of genetic manipulation and has never produced any vaccine or drug before its genetically-manipulating synthetic 'Covid' shite. Look at the name – Mode-RNA or Modify-RNA. Another important point is that the US Supreme Court has ruled that genetically-modified DNA, or complementary DNA (cDNA) synthesized in the laboratory from messenger RNA, can be patented and owned. These psychopaths are doing this to the human body.

Cells replicate synthetic mRNA in the 'Covid vaccines' and in theory the body is tricked into making antigens which trigger antibodies to target the 'virus spike proteins' which as Dr Tom Cowan said have *never been seen*. Cut the crap and these 'vaccines' deliver *self-replicating* synthetic material to the cells with the effect of changing human DNA. The more of them you have the more that process is compounded while synthetic material is all the time self-replicating. 'Vaccine'-maker Moderna describes mRNA as 'like

software for the cell' and so they are messing with the body's software. What happens when you change the software in a computer? Everything changes. For this reason the Cult is preparing a production line of mRNA 'Covid vaccines' and a long list of excuses to use them as with all the 'variants' of a 'virus' never shown to exist. The plan is further to transfer the mRNA technique to other vaccines mostly given to children and young people. The cumulative consequences will be a transformation of human DNA through a constant infusion of synthetic genetic material which will kill many and change the rest. Now consider that governments that have given emergency approval for a vaccine that's not a vaccine; never been approved for humans before; had no testing worth the name; and the makers have been given immunity from prosecution for any deaths or adverse effects suffered by the public. The UK government awarded *permanent legal indemnity* to itself and its employees for harm done when a patient is being treated for 'Covid-19' or 'suspected Covid-19'. That is quite a thought when these are possible 'side-effects' from the 'vaccine' (they are not 'side', they are effects) listed by the US Food and Drug Administration:

Guillain-Barre syndrome; acute disseminated encephalomyelitis; transverse myelitis; encephalitis; myelitis; encephalomyelitis; meningoencephalitis; meningitis; encephalopathy; convulsions; seizures; stroke; narcolepsy; cataplexy; anaphylaxis; acute myocardial infarction (heart attack); myocarditis; pericarditis; autoimmune disease; death; implications for pregnancy, and birth outcomes; other acute demyelinating diseases; non anaphylactic allergy reactions; thrombocytopenia ; disseminated intravascular coagulation; venous thromboembolism; arthritis; arthralgia; joint pain; Kawasaki disease; multisystem inflammatory syndrome in children; vaccine enhanced disease. The latter is the way the 'vaccine' has the potential to make diseases far worse than they would otherwise be.

UK doctor and freedom campaigner Vernon Coleman described the conditions in this list as 'all unpleasant, most of them very serious, and you can't get more serious than death'. The thought that anyone at all has had the 'vaccine' in these circumstances is testament to the potential that humanity has for clueless, unquestioning, stupidity and for many that programmed stupidity has already been terminal.

An insider speaks

Dr Michael Yeadon is a former Vice President, head of research and Chief Scientific Adviser at vaccine giant Pfizer. Yeadon worked on the inside of Big Pharma, but that did not stop him becoming a vocal critic of 'Covid vaccines' and their potential for multiple harms, including infertility in women. By the spring of 2021 he went much further and even used the no, no, term 'conspiracy'. When you begin to see what is going on it is impossible not to do so. Yeadon spoke out in an interview with freedom campaigner James Delingpole and I mentioned earlier how he said that no one had samples of 'the virus'. He explained that the mRNA technique originated in the anti-cancer field and ways to turn on and off certain genes which could be advantageous if you wanted to stop cancer growing out of control. 'That's the origin of them. They are a very unusual application, really.' Yeadon said that treating a cancer patient with an aggressive procedure might be understandable if the alternative was dying, but it was quite another thing to use the same technique as a public health measure. Most people involved wouldn't catch the infectious agent you were vaccinating against and if they did they probably wouldn't die:

If you are really using it as a public health measure you really want to as close as you can get to zero side-effects ... I find it odd that they chose techniques that were really cutting their teeth in the field of oncology and I'm worried that in using gene-based vaccines that have to be injected in the body and spread around the body, get taken up into some cells, and the regulators haven't quite told us which cells they get taken up into ... you are going to be generating a wide range of responses ... with multiple steps each of which could go well or badly.

I doubt the Cult intends it to go well. Yeadon said that you can put any gene you like into the body through the 'vaccine'. 'You can certainly give them a gene that would do them some harm if you wanted.' I was intrigued when he said that when used in the cancer field the technique could turn genes on and off. I explore this process in *The Answer* and with different genes having different functions you could create mayhem – physically and psychologically – if you turned the wrong ones on and the right ones off. I read reports of an experiment by researchers at the University of Washington's school of computer science and engineering in which they encoded DNA to infect computers. The body is itself a biological computer and if human DNA can inflict damage on a computer why can't the computer via synthetic material mess with the human body? It can. The Washington research team said it was possible to insert malicious malware into 'physical DNA strands' and corrupt the computer system of a gene sequencing machine as it 'reads gene letters and stores them as binary digits 0 and 1'. They concluded that hackers could one day use blood or spit samples to access computer systems and obtain sensitive data from police forensics labs or infect genome files. It is at this level of digital interaction that synthetic 'vaccines' need to be seen to get the full picture and that will become very clear later on. Michael Yeadon said it made no sense to give the 'vaccine' to younger people who were in no danger from the 'virus'. What was the benefit? It was all downside with potential effects:

The fact that my government in what I thought was a civilised, rational country, is raining [the 'vaccine'] on people in their 30s and 40s, even my children in their 20s, they're getting letters and phone calls, I know this is not right and any of you doctors who are vaccinating you know it's not right, too. They are not at risk. They are not at risk from the disease, so you are now hoping that the side-effects are so rare that you get away with it. You don't give new technology ... that you don't understand to 100 percent of the population.

Blood clot problems with the AstraZeneca 'vaccine' have been affecting younger people to emphasise the downside risks with no benefit. AstraZeneca's version, produced with Oxford University, does not use mRNA, but still gets its toxic cocktail inside cells where

it targets DNA. The Johnson & Johnson 'vaccine' which uses a similar technique has also produced blood clot effects to such an extent that the United States paused its use at one point. They are all 'gene therapy' (cell modification) procedures and not 'vaccines'. The truth is that once the content of these injections enter cells we have no idea what the effect will be. People can speculate and some can give very educated opinions and that's good. In the end, though, only the makers know what their potions are designed to do and even they won't know every last consequence. Michael Yeadon was scathing about doctors doing what they knew to be wrong. 'Everyone's mute', he said. Doctors in the NHS must know this was not right, coming into work and injecting people. 'I don't know how they sleep at night. I know I couldn't do it. I know that if I were in that position I'd have to quit.' He said he knew enough about toxicology to know this was not a good risk-benefit. Yeadon had spoken to seven or eight university professors and all except two would not speak out publicly. Their universities had a policy that no one said anything that countered the government and its medical advisors. They were afraid of losing their government grants. This is how intimidation has been used to silence the truth at every level of the system. I say silence, but these people could still speak out if they made that choice. Yeadon called them 'moral cowards' – 'This is about your children and grandchildren's lives and you have just buggered off and left it.'

'Variant' nonsense

Some of his most powerful comments related to the alleged 'variants' being used to instil more fear, justify more lockdowns, and introduce more 'vaccines'. He said government claims about 'variants' were nonsense. He had checked the alleged variant 'codes' and they were 99.7 percent identical to the 'original'. This was the human identity difference equivalent to putting a baseball cap on and off or wearing it the other way round. A 0.3 percent difference would make it impossible for that 'variant' to escape immunity from the 'original'. This made no sense of having new 'vaccines' for

‘variants’. He said there would have to be at least a *30 percent* difference for that to be justified and even then he believed the immune system would still recognise what it was. Gates-funded ‘variant modeller’ and ‘vaccine’-pusher John Edmunds might care to comment. Yeadon said drug companies were making new versions of the ‘vaccine’ as a ‘top up’ for ‘variants’. Worse than that, he said, the ‘regulators’ around the world like the MHRA in the UK had got together and agreed that because ‘vaccines’ for ‘variants’ were so similar to the first ‘vaccines’ *they did not have to do safety studies*. How transparently sinister that is. This is when Yeadon said: ‘There is a conspiracy here.’ There was no need for another vaccine for ‘variants’ and yet we were told that there was and the country had shut its borders because of them. ‘They are going into hundreds of millions of arms without passing ‘go’ or any regulator. Why did they do that? Why did they pick this method of making the vaccine?’

The reason had to be something bigger than that it seemed and ‘it’s not protection against the virus’. It’s was a far bigger project that meant politicians and advisers were willing to do things and not do things that knowingly resulted in avoidable deaths – ‘that’s already happened when you think about lockdown and deprivation of health care for a year.’ He spoke of people prepared to do something that results in the avoidable death of their fellow human beings and it not bother them. This is the penny-drop I have been working to get across for more than 30 years – the level of pure evil we are dealing with. Yeadon said his friends and associates could not believe there could be that much evil, but he reminded them of Stalin, Pol Pot and Hitler and of what Stalin had said: ‘One death is a tragedy. A million? A statistic.’ He could not think of a benign explanation for why you need top-up vaccines ‘which I’m sure you don’t’ and for the regulators ‘to just get out of the way and wave them through’. Why would the regulators do that when they were still wrestling with the dangers of the ‘parent’ vaccine? He was clearly shocked by what he had seen since the ‘Covid’ hoax began and now he was thinking the previously unthinkable:

If you wanted to depopulate a significant proportion of the world and to do it in a way that doesn't involve destruction of the environment with nuclear weapons, poisoning everyone with anthrax or something like that, and you wanted plausible deniability while you had a multi-year infectious disease crisis, I actually don't think you could come up with a better plan of work than seems to be in front of me. I can't say that's what they are going to do, but I can't think of a benign explanation why they are doing it.

He said he never thought that they would get rid of 99 percent of humans, but now he wondered. 'If you wanted to that this would be a hell of a way to do it – it would be unstoppable folks.' Yeadon had concluded that those who submitted to the 'vaccine' would be allowed to have some kind of normal life (but for how long?) while screws were tightened to coerce and mandate the last few percent. 'I think they'll put the rest of them in a prison camp. I wish I was wrong, but I don't think I am.' Other points he made included: There were no coronavirus vaccines then suddenly they all come along at the same time; we have no idea of the long term affect with trials so short; coercing or forcing people to have medical procedures is against the Nuremberg Code instigated when the Nazis did just that; people should at least delay having the 'vaccine'; a quick Internet search confirms that masks don't reduce respiratory viral transmission and 'the government knows that'; they have smashed civil society and they know that, too; two dozen peer-reviewed studies show no connection between lockdown and reducing deaths; he knew from personal friends the elite were still flying around and going on holiday while the public were locked down; the elite were not having the 'vaccines'. He was also asked if 'vaccines' could be made to target difference races. He said he didn't know, but the document by the Project for the New American Century in September, 2000, said developing 'advanced forms of biological warfare that can target *specific genotypes* may transform biological warfare from the realm of terror to a politically useful tool.' Oh, they're evil all right. Of that we can be *absolutely* sure.

Another cull of old people

We have seen from the CDC definition that the mRNA 'Covid vaccine' is not a vaccine and nor are the others that *claim* to reduce 'severity of symptoms' in *some* people, but not protect from infection or transmission. What about all the lies about returning to 'normal' if people were 'vaccinated'? If they are not claimed to stop infection and transmission of the alleged 'virus', how does anything change? This was all lies to manipulate people to take the jabs and we are seeing that now with masks and distancing still required for the 'vaccinated'. How did they think that elderly people with fragile health and immune responses were going to be affected by infusing their cells with synthetic material and other toxic substances? They *knew* that in the short and long term it would be devastating and fatal as the culling of the old that began with the first lockdowns was continued with the 'vaccine'. Death rates in care homes soared immediately residents began to be 'vaccinated' – infused with synthetic material. Brave and committed whistleblower nurses put their careers at risk by exposing this truth while the rest kept their heads down and their mouths shut to put their careers before those they are supposed to care for. A long-time American Certified Nursing Assistant who gave his name as James posted a video in which he described emotionally what happened in his care home when vaccination began. He said that during 2020 very few residents were sick with 'Covid' and no one died during the entire year; but shortly after the Pfizer mRNA injections 14 people died within two weeks and many others were near death. 'They're dropping like flies', he said. Residents who walked on their own before the shot could no longer and they had lost their ability to conduct an intelligent conversation. The home's management said the sudden deaths were caused by a 'super-spreader' of 'Covid-19'. Then how come, James asked, that residents who refused to take the injections were not sick? It was a case of inject the elderly with mRNA synthetic potions and blame their illness and death that followed on the 'virus'. James described what was happening in care homes as 'the greatest crime of genocide this country has ever seen'. Remember the NHS staff nurse from earlier who used the same

word 'genocide' for what was happening with the 'vaccines' and that it was an 'act of human annihilation'. A UK care home whistleblower told a similar story to James about the effect of the 'vaccine' in deaths and 'outbreaks' of illness dubbed 'Covid' after getting the jab. She told how her care home management and staff had zealously imposed government regulations and no one was allowed to even question the official narrative let alone speak out against it. She said the NHS was even worse. Again we see the results of reframing. A worker at a local care home where I live said they had not had a single case of 'Covid' there for almost a year and when the residents were 'vaccinated' they had 19 positive cases in two weeks with eight dying.

It's not the 'vaccine' – honest

The obvious cause and effect was being ignored by the media and most of the public. Australia's health minister Greg Hunt (a former head of strategy at the World Economic Forum) was admitted to hospital after he had the 'vaccine'. He was suffering according to reports from the skin infection 'cellulitis' and it must have been a severe case to have warranted days in hospital. Immediately the authorities said this was nothing to do with the 'vaccine' when an effect of some vaccines is a 'cellulitis-like reaction'. We had families of perfectly healthy old people who died after the 'vaccine' saying that if only they had been given the 'vaccine' earlier they would still be alive. As a numbskull rating that is off the chart. A father of four 'died of Covid' at aged 48 when he was taken ill two days after having the 'vaccine'. The man, a health administrator, had been 'shielding during the pandemic' and had 'not really left the house' until he went for the 'vaccine'. Having the 'vaccine' and then falling ill and dying does not seem to have qualified as a possible cause and effect and 'Covid-19' went on his death certificate. His family said they had no idea how he 'caught the virus'. A family member said: 'Tragically, it could be that going for a vaccination ultimately led to him catching Covid ...The sad truth is that they are never going to know where it came from.' The family warned people to remember

that the virus still existed and was 'very real'. So was their stupidity. Nurses and doctors who had the first round of the 'vaccine' were collapsing, dying and ending up in a hospital bed while they or their grieving relatives were saying they'd still have the 'vaccine' again despite what happened. I kid you not. You mean if your husband returned from the dead he'd have the same 'vaccine' again that killed him??

Doctors at the VCU Medical Center in Richmond, Virginia, said the Johnson & Johnson 'vaccine' was to blame for a man's skin peeling off. Patient Richard Terrell said: 'It all just happened so fast. My skin peeled off. It's still coming off on my hands now.' He said it was stinging, burning and itching and when he bent his arms and legs it was very painful with 'the skin swollen and rubbing against itself'. Pfizer/BioNTech and Moderna vaccines use mRNA to change the cell while the Johnson & Johnson version uses DNA in a process similar to AstraZeneca's technique. Johnson & Johnson and AstraZeneca have both had their 'vaccines' paused by many countries after causing serious blood problems. Terrell's doctor Fnu Nutan said he could have died if he hadn't got medical attention. It sounds terrible so what did Nutan and Terrell say about the 'vaccine' now? Oh, they still recommend that people have it. A nurse in a hospital bed 40 minutes after the vaccination and unable to swallow due to throat swelling was told by a doctor that he lost mobility in his arm for 36 hours following the vaccination. What did he say to the ailing nurse? 'Good for you for getting the vaccination.' We are dealing with a serious form of cognitive dissonance madness in both public and medical staff. There is a remarkable correlation between those having the 'vaccine' and trumpeting the fact and suffering bad happenings shortly afterwards. Witold Rogiewicz, a Polish doctor, made a video of his 'vaccination' and ridiculed those who were questioning its safety and the intentions of Bill Gates: 'Vaccinate yourself to protect yourself, your loved ones, friends and also patients. And to mention quickly I have info for anti-vaxxers and anti-Covidors if you want to contact Bill Gates you can do this through me.' He further ridiculed the dangers of 5G. Days later he

was dead, but naturally the vaccination wasn't mentioned in the verdict of 'heart attack'.

Lies, lies and more lies

So many members of the human race have slipped into extreme states of insanity and unfortunately they include reframed doctors and nursing staff. Having a 'vaccine' and dying within minutes or hours is not considered a valid connection while death from any cause within 28 days or longer of a positive test with a test not testing for the 'virus' means 'Covid-19' goes on the death certificate. How could that 'vaccine'-death connection not have been made except by calculated deceit? US figures in the initial rollout period to February 12th, 2020, revealed that a third of the deaths reported to the CDC after 'Covid vaccines' happened within 48 hours. Five men in the UK suffered an 'extremely rare' blood clot problem after having the AstraZeneca 'vaccine', but no causal link was established said the Gates-funded Medicines and Healthcare products Regulatory Agency (MHRA) which had given the 'vaccine' emergency approval to be used. Former Pfizer executive Dr Michael Yeadon explained in his interview how the procedures could cause blood coagulation and clots. People who should have been at no risk were dying from blood clots in the brain and he said he had heard from medical doctor friends that people were suffering from skin bleeding and massive headaches. The AstraZeneca 'shot' was stopped by some 20 countries over the blood clotting issue and still the corrupt MHRA, the European Medicines Agency (EMA) and the World Health Organization said that it should continue to be given even though the EMA admitted that it 'still cannot rule out definitively' a link between blood clotting and the 'vaccine'. Later Marco Cavaleri, head of EMA vaccine strategy, said there was indeed a clear link between the 'vaccine' and thrombosis, but they didn't know why. So much for the trials showing the 'vaccine' is safe. Blood clots were affecting younger people who would be under virtually no danger from 'Covid' even if it existed which makes it all the more stupid and sinister.

The British government responded to public alarm by wheeling out June Raine, the terrifyingly weak infant school headmistress sound-alike who heads the UK MHRA drug 'regulator'. The idea that she would stand up to Big Pharma and government pressure is laughable and she told us that all was well in the same way that she did when allowing untested, never-used-on-humans-before, genetically-manipulating 'vaccines' to be exposed to the public in the first place. Mass lying is the new normal of the 'Covid' era. The MHRA later said 30 cases of rare blood clots had by then been connected with the AstraZeneca 'vaccine' (that means a lot more in reality) while stressing that the benefits of the jab in preventing 'Covid-19' outweighed any risks. A more ridiculous and disingenuous statement with callous disregard for human health it is hard to contemplate. Immediately after the mendacious 'all-clears' two hospital workers in Denmark experienced blood clots and cerebral haemorrhaging following the AstraZeneca jab and one died. Top Norwegian health official Pål Andre Holme said the 'vaccine' was the only common factor: 'There is nothing in the patient history of these individuals that can give such a powerful immune response ... I am confident that the antibodies that we have found are the cause, and I see no other explanation than it being the vaccine which triggers it.' Strokes, a clot or bleed in the brain, were clearly associated with the 'vaccine' from word of mouth and whistleblower reports. Similar consequences followed with all these 'vaccines' that we were told were so safe and as the numbers grew by the day it was clear we were witnessing human carnage.

Learning the hard way

A woman interviewed by UKColumn told how her husband suffered dramatic health effects after the vaccine when he'd been in good health all his life. He went from being a little unwell to losing all feeling in his legs and experiencing 'excruciating pain'. Misdiagnosis followed twice at Accident and Emergency (an 'allergy' and 'sciatica') before he was admitted to a neurology ward where doctors said his serious condition had been caused by the

'vaccine'. Another seven 'vaccinated' people were apparently being treated on the same ward for similar symptoms. The woman said he had the 'vaccine' because they believed media claims that it was safe. 'I didn't think the government would give out a vaccine that does this to somebody; I believed they would be bringing out a vaccination that would be safe.' What a tragic way to learn that lesson. Another woman posted that her husband was transporting stroke patients to hospital on almost every shift and when he asked them if they had been 'vaccinated' for 'Covid' they all replied 'yes'. One had a 'massive brain bleed' the day after his second dose. She said her husband reported the 'just been vaccinated' information every time to doctors in A and E only for them to ignore it, make no notes and appear annoyed that it was even mentioned. This particular report cannot be verified, but it expresses a common theme that confirms the monumental underreporting of 'vaccine' consequences. Interestingly as the 'vaccines' and their brain blood clot/stroke consequences began to emerge the UK National Health Service began a publicity campaign telling the public what to do in the event of a stroke. A Scottish NHS staff nurse who quit in disgust in March, 2021, said:

I have seen traumatic injuries from the vaccine, they're not getting reported to the yellow card [adverse reaction] scheme, they're treating the symptoms, not asking why, why it's happening. It's just treating the symptoms and when you speak about it you're dismissed like you're crazy, I'm not crazy, I'm not crazy because every other colleague I've spoken to is terrified to speak out, they've had enough.

Videos appeared on the Internet of people uncontrollably shaking after the 'vaccine' with no control over muscles, limbs and even their face. A Scottish mother broke out in a severe rash all over her body almost immediately after she was given the AstraZeneca 'vaccine'. The pictures were horrific. Leigh King, a 41-year-old hairdresser from Lanarkshire said: 'Never in my life was I prepared for what I was about to experience ... My skin was so sore and constantly hot ... I have never felt pain like this ...' But don't you worry, the 'vaccine' is perfectly safe. Then there has been the effect on medical

staff who have been pressured to have the 'vaccine' by psychopathic 'health' authorities and government. A London hospital consultant who gave the name K. Polyakova wrote this to the *British Medical Journal* or *BMJ*:

I am currently struggling with ... the failure to report the reality of the morbidity caused by our current vaccination program within the health service and staff population. The levels of sickness after vaccination is unprecedented and staff are getting very sick and some with neurological symptoms which is having a huge impact on the health service function. Even the young and healthy are off for days, some for weeks, and some requiring medical treatment. Whole teams are being taken out as they went to get vaccinated together.

Mandatory vaccination in this instance is stupid, unethical and irresponsible when it comes to protecting our staff and public health. We are in the voluntary phase of vaccination, and encouraging staff to take an unlicensed product that is impacting on their immediate health ... it is clearly stated that these vaccine products do not offer immunity or stop transmission. In which case why are we doing it?

Not to protect health that's for sure. Medical workers are lauded by governments for agenda reasons when they couldn't give a toss about them any more than they can for the population in general. Schools across America faced the same situation as they closed due to the high number of teachers and other staff with bad reactions to the Pfizer/BioNTech, Moderna, and Johnson & Johnson 'Covid vaccines' all of which were linked to death and serious adverse effects. The *BMJ* took down the consultant's comments pretty quickly on the grounds that they were being used to spread 'disinformation'. They were exposing the truth about the 'vaccine' was the real reason. The cover-up is breathtaking.

Hiding the evidence

The scale of the 'vaccine' death cover-up worldwide can be confirmed by comparing official figures with the personal experience of the public. I heard of many people in my community who died immediately or soon after the vaccine that would never appear in the media or even likely on the official totals of 'vaccine' fatalities and adverse reactions when only about ten percent are estimated to be

reported and I have seen some estimates as low as one percent in a Harvard study. In the UK alone by April 29th, 2021, some 757,654 adverse reactions had been officially reported from the Pfizer/BioNTech, Oxford/AstraZeneca and Moderna 'vaccines' with more than a thousand deaths linked to jabs and that means an estimated ten times this number in reality from a ten percent reporting rate percentage. That's seven million adverse reactions and 10,000 potential deaths and a one percent reporting rate would be ten times *those* figures. In 1976 the US government pulled the swine flu vaccine after 53 deaths. The UK data included a combined 10,000 eye disorders from the 'Covid vaccines' with more than 750 suffering visual impairment or blindness and again multiply by the estimated reporting percentages. As 'Covid cases' officially fell hospitals virtually empty during the 'Covid crisis' began to fill up with a range of other problems in the wake of the 'vaccine' rollout. The numbers across America have also been catastrophic. Deaths linked to *all* types of vaccine increased by 6,000 *percent* in the first quarter of 2021 compared with 2020. A 39-year-old woman from Ogden, Utah, died four days after receiving a second dose of Moderna's 'Covid vaccine' when her liver, heart and kidneys all failed despite the fact that she had no known medical issues or conditions. Her family sought an autopsy, but Dr Erik Christensen, Utah's chief medical examiner, said proving vaccine injury as a cause of death almost never happened. He could think of only one instance where an autopsy would name a vaccine as the official cause of death and that would be anaphylaxis where someone received a vaccine and died almost instantaneously. 'Short of that, it would be difficult for us to definitively say this is the vaccine,' Christensen said. If that is true this must be added to the estimated ten percent (or far less) reporting rate of vaccine deaths and serious reactions and the conclusion can only be that vaccine deaths and serious reactions – including these 'Covid' potions' – are phenomenally understated in official figures. The same story can be found everywhere. Endless accounts of deaths and serious reactions among the public, medical

and care home staff while official figures did not even begin to reflect this.

Professional script-reader Dr David Williams, a 'top public-health official' in Ontario, Canada, insulted our intelligence by claiming only four serious adverse reactions and no deaths from the more than 380,000 vaccine doses then given. This bore no resemblance to what people knew had happened in their own circles and we had Dirk Huyer in charge of getting millions vaccinated in Ontario while at the same time he was Chief Coroner for the province investigating causes of death including possible death from the vaccine. An aide said he had stepped back from investigating deaths, but evidence indicated otherwise. Rosemary Frei, who secured a Master of Science degree in molecular biology at the Faculty of Medicine at Canada's University of Calgary before turning to investigative journalism, was one who could see that official figures for 'vaccine' deaths and reactions made no sense. She said that doctors seldom reported adverse events and when people got really sick or died after getting a vaccination they would attribute that to anything except the vaccines. It had been that way for years and anyone who wondered aloud whether the 'Covid vaccines' or other shots cause harm is immediately branded as 'anti-vax' and 'anti-science'. This was 'career-threatening' for health professionals. Then there was the huge pressure to support the push to 'vaccinate' billions in the quickest time possible. Frei said:

So that's where we're at today. More than half a million vaccine doses have been given to people in Ontario alone. The rush is on to vaccinate all 15 million of us in the province by September. And the mainstream media are screaming for this to be sped up even more. That all adds up to only a very slim likelihood that we're going to be told the truth by officials about how many people are getting sick or dying from the vaccines.

What is true of Ontario is true of everywhere.

They KNEW – and still did it

The authorities knew what was going to happen with multiple deaths and adverse reactions. The UK government's Gates-funded

and Big Pharma-dominated Medicines and Healthcare products Regulatory Agency (MHRA) hired a company to employ AI in compiling the projected reactions to the 'vaccine' that would otherwise be uncountable. The request for applications said: 'The MHRA urgently seeks an Artificial Intelligence (AI) software tool to process the expected high volume of Covid-19 vaccine Adverse Drug Reaction ...' This was from the agency, headed by the disingenuous June Raine, that gave the 'vaccines' emergency approval and the company was hired before the first shot was given. 'We are going to kill and maim you – is that okay?' 'Oh, yes, perfectly fine – I'm very grateful, thank you, doctor.' The range of 'Covid vaccine' adverse reactions goes on for page after page in the MHRA criminally underreported 'Yellow Card' system and includes affects to eyes, ears, skin, digestion, blood and so on. Raine's MHRA amazingly claimed that the 'overall safety experience ... is so far as expected from the clinical trials'. The death, serious adverse effects, deafness and blindness were *expected*? When did they ever mention that? If these human tragedies were expected then those that gave approval for the use of these 'vaccines' must be guilty of crimes against humanity including murder – a definition of which is 'killing a person with malice aforethought or with recklessness manifesting extreme indifference to the value of human life.' People involved at the MHRA, the CDC in America and their equivalent around the world must go before Nuremberg trials to answer for their callous inhumanity. We are only talking here about the immediate effects of the 'vaccine'. The longer-term impact of the DNA synthetic manipulation is the main reason they are so hysterically desperate to inoculate the entire global population in the shortest possible time.

Africa and the developing world are a major focus for the 'vaccine' depopulation agenda and a mass vaccination sales-pitch is underway thanks to caring people like the Rockefellers and other Cult assets. The Rockefeller Foundation, which pre-empted the 'Covid pandemic' in a document published in 2010 that 'predicted' what happened a decade later, announced an initial \$34.95 million grant in February, 2021, 'to ensure more equitable access to Covid-19

testing and vaccines' among other things in Africa in collaboration with '24 organizations, businesses, and government agencies'. The pan-Africa initiative would focus on 10 countries: Burkina Faso, Ethiopia, Ghana, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia'. Rajiv Shah, President of the Rockefeller Foundation and former administrator of CIA-controlled USAID, said that if Africa was not mass-vaccinated (to change the DNA of its people) it was a 'threat to all of humanity' and not fair on Africans. When someone from the Rockefeller Foundation says they want to do something to help poor and deprived people and countries it is time for a belly-laugh. They are doing this out of the goodness of their 'heart' because 'vaccinating' the entire global population is what the 'Covid' hoax set out to achieve. Official 'decolonisation' of Africa by the Cult was merely a prelude to financial colonisation on the road to a return to physical colonisation. The 'vaccine' is vital to that and the sudden and convenient death of the 'Covid' sceptic president of Tanzania can be seen in its true light. A lot of people in Africa are aware that this is another form of colonisation and exploitation and they need to stand their ground.

The 'vaccine is working' scam

A potential problem for the Cult was that the 'vaccine' is meant to change human DNA and body messaging and not to protect anyone from a 'virus' never shown to exist. The vaccine couldn't work because it was not designed to work and how could they make it *appear* to be working so that more people would have it? This was overcome by lowering the amplification rate of the PCR test to produce fewer 'cases' and therefore fewer 'deaths'. Some of us had been pointing out since March, 2020, that the amplification rate of the test not testing for the 'virus' had been made artificially high to generate positive tests which they could call 'cases' to justify lockdowns. The World Health Organization recommended an absurdly high 45 amplification cycles to ensure the high positives required by the Cult and then remained silent on the issue until January 20th, 2021 – Biden's Inauguration Day. This was when the

'vaccinations' were seriously underway and on that day the WHO recommended after discussions with America's CDC that laboratories *lowered their testing amplification*. Dr David Samadi, a certified urologist and health writer, said the WHO was encouraging all labs to reduce their cycle count for PCR tests. He said the current cycle was much too high and was 'resulting in any particle being declared a positive case'. Even one mainstream news report I saw said this meant the number of 'Covid' infections may have been 'dramatically inflated'. Oh, just a little bit. The CDC in America issued new guidance to laboratories in April, 2021, to use 28 cycles *but only for 'vaccinated' people*. The timing of the CDC/WHO interventions were cynically designed to make it appear the 'vaccines' were responsible for falling cases and deaths when the real reason can be seen in the following examples. New York's state lab, the Wadsworth Center, identified 872 positive tests in July, 2020, based on a threshold of 40 cycles. When the figure was lowered to 35 cycles 43 percent of the 872 were no longer 'positives'. At 30 cycles the figure was 63 percent. A Massachusetts lab found that between 85 to 90 percent of people who tested positive in July with a cycle threshold of 40 would be negative at 30 cycles, Ashish Jha, MD, director of the Harvard Global Health Institute, said: 'I'm really shocked that it could be that high ... Boy, does it really change the way we need to be thinking about testing.' I'm shocked that I could see the obvious in the spring of 2020, with no medical background, and most medical professionals still haven't worked it out. No, that's not shocking – it's terrifying.

Three weeks after the WHO directive to lower PCR cycles the London *Daily Mail* ran this headline: 'Why ARE Covid cases plummeting? New infections have fallen 45% in the US and 30% globally in the past 3 weeks but experts say vaccine is NOT the main driver because only 8% of Americans and 13% of people worldwide have received their first dose.' They acknowledged that the drop could not be attributed to the 'vaccine', but soon this morphed throughout the media into the 'vaccine' has caused cases and deaths to fall when it was the PCR threshold. In December, 2020, there was

chaos at English Channel ports with truck drivers needing negative 'Covid' tests before they could board a ferry home for Christmas. The government wanted to remove the backlog as fast as possible and they brought in troops to do the 'testing'. Out of 1,600 drivers just 36 tested positive and the rest were given the all clear to cross the Channel. I guess the authorities thought that 36 was the least they could get away with without the unquestioning catching on. The amplification trick which most people believed in the absence of information in the mainstream applied more pressure on those refusing the 'vaccine' to succumb when it 'obviously worked'. The truth was the exact opposite with deaths in care homes soaring with the 'vaccine' and in Israel the term used was 'skyrocket'. A re-analysis of published data from the Israeli Health Ministry led by Dr Hervé Seligmann at the Medicine Emerging Infectious and Tropical Diseases at Aix-Marseille University found that Pfizer's 'Covid vaccine' killed 'about 40 times more [elderly] people than the disease itself would have killed' during a five-week vaccination period and *260 times* more younger people than would have died from the 'virus' even according to the manipulated 'virus' figures. Dr Seligmann and his co-study author, Haim Yativ, declared after reviewing the Israeli 'vaccine' death data: 'This is a new Holocaust.'

Then, in mid-April, 2021, after vast numbers of people worldwide had been 'vaccinated', the story changed with clear coordination. The UK government began to prepare the ground for more future lockdowns when Nuremberg-destined Boris Johnson told yet another whopper. He said that cases had fallen because of *lockdowns* not 'vaccines'. Lockdowns are irrelevant when *there is no 'virus'* and the test and fraudulent death certificates are deciding the number of 'cases' and 'deaths'. Study after study has shown that lockdowns don't work and instead kill and psychologically destroy people. Meanwhile in the United States Anthony Fauci and Rochelle Walensky, the ultra-Zionist head of the CDC, peddled the same line. More lockdown was the answer and not the 'vaccine', a line repeated on cue by the moron that is Canadian Prime Minister Justin Trudeau. Why all the hysteria to get everyone 'vaccinated' if lockdowns and

not 'vaccines' made the difference? None of it makes sense on the face of it. Oh, but it does. The Cult wants lockdowns *and* the 'vaccine' and if the 'vaccine' is allowed to be seen as the total answer lockdowns would no longer be justified when there are still livelihoods to destroy. 'Variants' and renewed upward manipulation of PCR amplification are planned to instigate never-ending lockdown *and* more 'vaccines'.

You *must* have it – we're desperate

Israel, where the Jewish and Arab population are ruled by the Sabbatian Cult, was the front-runner in imposing the DNA-manipulating 'vaccine' on its people to such an extent that Jewish refusers began to liken what was happening to the early years of Nazi Germany. This would seem to be a fantastic claim. Why would a government of Jewish people be acting like the Nazis did? If you realise that the Sabbatian Cult was behind the Nazis and that Sabbatians hate Jews the pieces start to fit and the question of why a 'Jewish' government would treat Jews with such callous disregard for their lives and freedom finds an answer. Those controlling the government of Israel *aren't Jewish* – they're Sabbatian. Israeli lawyer Tamir Turgal was one who made the Nazi comparison in comments to German lawyer Reiner Fuellmich who is leading a class action lawsuit against the psychopaths for crimes against humanity. Turgal described how the Israeli government was vaccinating children and pregnant women on the basis that there was no evidence that this was dangerous when they had no evidence that it *wasn't* dangerous either. They just had no evidence. This was medical experimentation and Turgal said this breached the Nuremberg Code about medical experimentation and procedures requiring informed consent and choice. Think about that. A Nuremberg Code developed because of Nazi experimentation on Jews and others in concentration camps by people like the evil-beyond-belief Josef Mengele is being breached by the *Israeli* government; but when you know that it's a *Sabbatian* government along with its intelligence and military agencies like Mossad, Shin Bet and the Israeli Defense Forces, and that Sabbatians

were the force behind the Nazis, the kaleidoscope comes into focus. What have we come to when Israeli Jews are suing their government for violating the Nuremberg Code by essentially making Israelis subject to a medical experiment using the controversial 'vaccines'? It's a shocker that this has to be done in the light of what happened in Nazi Germany. The Anshe Ha-Emet, or 'People of the Truth', made up of Israeli doctors, lawyers, campaigners and public, have launched a lawsuit with the International Criminal Court. It says:

When the heads of the Ministry of Health as well as the prime minister presented the vaccine in Israel and began the vaccination of Israeli residents, the vaccinated were not advised, that, in practice, they are taking part in a medical experiment and that their consent is required for this under the Nuremberg Code.

The irony is unbelievable, but easily explained in one word: Sabbatians. The foundation of Israeli 'Covid' apartheid is the 'green pass' or 'green passport' which allows Jews and Arabs who have had the DNA-manipulating 'vaccine' to go about their lives – to work, fly, travel in general, go to shopping malls, bars, restaurants, hotels, concerts, gyms, swimming pools, theatres and sports venues, while non-'vaccinated' are banned from all those places and activities. Israelis have likened the 'green pass' to the yellow stars that Jews in Nazi Germany were forced to wear – the same as the yellow stickers that a branch of UK supermarket chain Morrisons told exempt mask-wearers they had to display when shopping. How very sensitive. The Israeli system is blatant South African-style apartheid on the basis of compliance or non-compliance to fascism rather than colour of the skin. How appropriate that the Sabbatian Israeli government was so close to the pre-Mandela apartheid regime in Pretoria. The Sabbatian-instigated 'vaccine passport' in Israel is planned for everywhere. Sabbatians struck a deal with Pfizer that allowed them to lead the way in the percentage of a national population infused with synthetic material and the result was catastrophic. Israeli freedom activist Shai Dannon told me how chairs were appearing on beaches that said 'vaccinated only'. Health Minister Yuli Edelstein said that anyone unwilling or unable to get

the jabs that 'confer immunity' will be 'left behind'. The man's a liar. Not even the makers claim the 'vaccines' confer immunity. When you see those figures of 'vaccine' deaths these psychopaths were saying that you must take the chance the 'vaccine' will kill you or maim you while knowing it will change your DNA or lockdown for you will be permanent. That's fascism. The Israeli parliament passed a law to allow personal information of the non-vaccinated to be shared with local and national authorities for three months. This was claimed by its supporters to be a way to 'encourage' people to be vaccinated. Hadas Ziv from Physicians for Human Rights described this as a 'draconian law which crushed medical ethics and the patient rights'. But that's the idea, the Sabbatians would reply.

Your papers, please

Sabbatian Israel was leading what has been planned all along to be a global 'vaccine pass' called a 'green passport' without which you would remain in permanent lockdown restriction and unable to do anything. This is how badly – *desperately* – the Cult is to get everyone 'vaccinated'. The term and colour 'green' was not by chance and related to the psychology of fusing the perception of the green climate hoax with the 'Covid' hoax and how the 'solution' to both is the same Great Reset. Lying politicians, health officials and psychologists denied there were any plans for mandatory vaccinations or restrictions based on vaccinations, but they knew that was exactly what was meant to happen with governments of all countries reaching agreements to enforce a global system. 'Free' Denmark and 'free' Sweden unveiled digital vaccine certification. Cyprus, Czech Republic, Estonia, Greece, Hungary, Iceland, Italy, Poland, Portugal, Slovakia, and Spain have all committed to a vaccine passport system and the rest including the whole of the EU would follow. The satanic UK government will certainly go this way despite mendacious denials and at the time of writing it is trying to manipulate the public into having the 'vaccine' so they could go abroad on a summer holiday. How would that work without something to prove you had the synthetic toxicity injected into you?

Documents show that the EU's European Commission was moving towards 'vaccine certificates' in 2018 and 2019 before the 'Covid' hoax began. They knew what was coming. Abracadabra – Ursula von der Leyen, the German President of the Commission, announced in March, 2021, an EU 'Digital Green Certificate' – green again – to track the public's 'Covid status'. The passport sting is worldwide and the Far East followed the same pattern with South Korea ruling that only those with 'vaccination' passports – again the *green* pass – would be able to 'return to their daily lives'.

Bill Gates has been preparing for this 'passport' with other Cult operatives for years and beyond the paper version is a Gates-funded 'digital tattoo' to identify who has been vaccinated and who hasn't. The 'tattoo' is reported to include a substance which is externally readable to confirm who has been vaccinated. This is a bio-luminous light-generating enzyme (think fireflies) called ... *Luciferase*. Yes, named after the Cult 'god' Lucifer the 'light bringer' of whom more to come. Gates said he funded the readable tattoo to ensure children in the developing world were vaccinated and no one was missed out. He cares so much about poor kids as we know. This was just the cover story to develop a vaccine tagging system for everyone on the planet. Gates has been funding the ID2020 'alliance' to do just that in league with other lovely people at Microsoft, GAVI, the Rockefeller Foundation, Accenture and IDEO.org. He said in interviews in March, 2020, before any 'vaccine' publicly existed, that the world must have a globalised digital certificate to track the 'virus' and who had been vaccinated. Gates knew from the start that the mRNA vaccines were coming and when they would come and that the plan was to tag the 'vaccinated' to marginalise the intelligent and stop them doing anything including travel. Evil just doesn't suffice. Gates was exposed for offering a \$10 million bribe to the Nigerian House of Representatives to invoke compulsory 'Covid' vaccination of all Nigerians. Sara Cunial, a member of the Italian Parliament, called Gates a 'vaccine criminal'. She urged the Italian President to hand him over to the International Criminal Court for crimes against

humanity and condemned his plans to 'chip the human race' through ID2020.

You know it's a long-planned agenda when war criminal and Cult gofer Tony Blair is on the case. With the scale of arrogance only someone as dark as Blair can muster he said: 'Vaccination in the end is going to be your route to liberty.' Blair is a disgusting piece of work and he confirms that again. The media has given a lot of coverage to a bloke called Charlie Mullins, founder of London's biggest independent plumbing company, Pimlico Plumbers, who has said he won't employ anyone who has not been vaccinated or have them go to any home where people are not vaccinated. He said that if he had his way no one would be allowed to walk the streets if they have not been vaccinated. Gates was cheering at the time while I was alerting the white coats. The plan is that people will qualify for 'passports' for having the first two doses and then to keep it they will have to have all the follow ups and new ones for invented 'variants' until human genetics is transformed and many are dead who can't adjust to the changes. Hollywood celebrities – the usual propaganda stunt – are promoting something called the WELL Health-Safety Rating to verify that a building or space has 'taken the necessary steps to prioritize the health and safety of their staff, visitors and other stakeholders'. They included Lady Gaga, Jennifer Lopez, Michael B. Jordan, Robert DeNiro, Venus Williams, Wolfgang Puck, Deepak Chopra and 17th Surgeon General Richard Carmona. Yawn. WELL Health-Safety has big connections with China. Parent company Delos is headed by former Goldman Sachs partner Paul Scialla. This is another example – and we will see so many others – of using the excuse of 'health' to dictate the lives and activities of the population. I guess one confirmation of the 'safety' of buildings is that only 'vaccinated' people can go in, right?

Electronic concentration camps

I wrote decades ago about the plans to restrict travel and here we are for those who refuse to bow to tyranny. This can be achieved in one go with air travel if the aviation industry makes a blanket decree.

The 'vaccine' and guaranteed income are designed to be part of a global version of China's social credit system which tracks behaviour 24/7 and awards or deletes 'credits' based on whether your behaviour is supported by the state or not. I mean your entire lifestyle – what you do, eat, say, everything. Once your credit score falls below a certain level consequences kick in. In China tens of millions have been denied travel by air and train because of this. All the locations and activities denied to refusers by the 'vaccine' passports will be included in one big mass ban on doing almost anything for those that don't bow their head to government. It's beyond fascist and a new term is required to describe its extremes – I guess fascist technocracy will have to do. The way the Chinese system of technological – technocratic – control is sweeping the West can be seen in the Los Angeles school system and is planned to be expanded worldwide. Every child is required to have a 'Covid'-tracking app scanned daily before they can enter the classroom. The so-called Daily Pass tracking system is produced by Gates' Microsoft which I'm sure will shock you rigid. The pass will be scanned using a barcode (one step from an inside-the-body barcode) and the information will include health checks, 'Covid' tests and vaccinations. Entry codes are for one specific building only and access will only be allowed if a student or teacher has a negative test with a test not testing for the 'virus', has no symptoms of anything alleged to be related to 'Covid' (symptoms from a range of other illness), and has a temperature under 100 degrees. No barcode, no entry, is planned to be the case for everywhere and not only schools.

Kids are being psychologically prepared to accept this as 'normal' their whole life which is why what they can impose in schools is so important to the Cult and its gofers. Long-time American freedom campaigner John Whitehead of the Rutherford Institute was not exaggerating when he said: 'Databit by databit, we are building our own electronic concentration camps.' Canada under its Cult gofer prime minister Justin Trudeau has taken a major step towards the real thing with people interned against their will if they test positive with a test not testing for the 'virus' when they arrive at a Canadian

airport. They are jailed in internment hotels often without food or water for long periods and with many doors failing to lock there have been sexual assaults. The interned are being charged sometimes \$2,000 for the privilege of being abused in this way. Trudeau is fully on board with the Cult and says the 'Covid pandemic' has provided an opportunity for a global 'reset' to permanently change Western civilisation. His number two, Deputy Prime Minister Chrystia Freeland, is a trustee of the World Economic Forum and a Rhodes Scholar. The Trudeau family have long been servants of the Cult. See *The Biggest Secret* and Cathy O'Brien's book *Trance-Formation of America* for the horrific background to Trudeau's father Pierre Trudeau another Canadian prime minister. Hide your fascism behind the façade of a heart-on-the-sleeve liberal. It's a well-honed Cult technique.

What can the 'vaccine' really do?

We have a 'virus' never shown to exist and 'variants' of the 'virus' that have also never been shown to exist except, like the 'original', as computer-generated fictions. Even if you believe there's a 'virus' the 'case' to 'death' rate is in the region of 0.23 to 0.15 percent and those 'deaths' are concentrated among the very old around the same average age that people die anyway. In response to this lack of threat (in truth none) psychopaths and idiots, knowingly and unknowingly answering to Gates and the Cult, are seeking to 'vaccinate' every man, woman and child on Planet Earth. Clearly the 'vaccine' is not about 'Covid' – none of this ever has been. So what is it all about *really*? Why the desperation to infuse genetically-manipulating synthetic material into everyone through mRNA fraudulent 'vaccines' with the intent of doing this over and over with the excuses of 'variants' and other 'virus' inventions? Dr Sherri Tenpenny, an osteopathic medical doctor in the United States, has made herself an expert on vaccines and their effects as a vehement campaigner against their use. Tenpenny was board certified in emergency medicine, the director of a level two trauma centre for 12 years, and moved to Cleveland in 1996 to start an integrative

medicine practice which has treated patients from all 50 states and some 17 other countries. Weaning people off pharmaceutical drugs is a speciality.

She became interested in the consequences of vaccines after attending a meeting at the National Vaccine Information Center in Washington DC in 2000 where she 'sat through four days of listening to medical doctors and scientists and lawyers and parents of vaccine injured kids' and asked: 'What's going on?' She had never been vaccinated and never got ill while her father was given a list of vaccines to be in the military and was 'sick his entire life'. The experience added to her questions and she began to examine vaccine documents from the Centers for Disease Control (CDC). After reading the first one, the 1998 version of *The General Recommendations of Vaccination*, she thought: 'This is it?' The document was poorly written and bad science and Tenpenny began 20 years of research into vaccines that continues to this day. She began her research into 'Covid vaccines' in March, 2020, and she describes them as 'deadly'. For many, as we have seen, they already have been. Tenpenny said that in the first 30 days of the 'vaccine' rollout in the United States there had been more than 40,000 adverse events reported to the vaccine adverse event database. A document had been delivered to her the day before that was 172 pages long. 'We have over 40,000 adverse events; we have over 3,100 cases of [potentially deadly] anaphylactic shock; we have over 5,000 neurological reactions.' Effects ranged from headaches to numbness, dizziness and vertigo, to losing feeling in hands or feet and paraesthesia which is when limbs 'fall asleep' and people have the sensation of insects crawling underneath their skin. All this happened in the first 30 days and remember that only about *ten percent* (or far less) of adverse reactions and vaccine-related deaths are estimated to be officially reported. Tenpenny said:

So can you think of one single product in any industry, any industry, for as long as products have been made on the planet that within 30 days we have 40,000 people complaining of side effects that not only is still on the market but ... we've got paid actors telling us how great

they are for getting their vaccine. We're offering people \$500 if they will just get their vaccine and we've got nurses and doctors going; 'I got the vaccine, I got the vaccine'.

Tenpenny said they were not going to be 'happy dancing folks' when they began to suffer Bell's palsy (facial paralysis), neuropathies, cardiac arrhythmias and autoimmune reactions that kill through a blood disorder. 'They're not going to be so happy, happy then, but we're never going to see pictures of those people' she said. Tenpenny described the 'vaccine' as 'a well-designed killing tool'.

No off-switch

Bad as the initial consequences had been Tenpenny said it would be maybe 14 months before we began to see the 'full ravage' of what is going to happen to the 'Covid vaccinated' with full-out consequences taking anything between two years and 20 years to show. You can understand why when you consider that variations of the 'Covid vaccine' use mRNA (messenger RNA) to in theory activate the immune system to produce protective antibodies without using the actual 'virus'. How can they when it's a computer program and they've never isolated what they claim is the 'real thing'? Instead they use *synthetic* mRNA. They are inoculating synthetic material into the body which through a technique known as the Trojan horse is absorbed into cells to change the nature of DNA. Human DNA is changed by an infusion of messenger RNA and with each new 'vaccine' of this type it is changed even more. Say so and you are banned by Cult Internet platforms. The contempt the contemptuous Mark Zuckerberg has for the truth and human health can be seen in an internal Facebook video leaked to the Project Veritas investigative team in which he said of the 'Covid vaccines': '... I share some caution on this because we just don't know the long term side-effects of basically modifying people's DNA and RNA.' At the same time this disgusting man's Facebook was censoring and banning anyone saying exactly the same. He must go before a Nuremberg trial for crimes against humanity when he *knows* that he

is censoring legitimate concerns and denying the right of informed consent on behalf of the Cult that owns him. People have been killed and damaged by the very 'vaccination' technique he cast doubt on himself when they may not have had the 'vaccine' with access to information that he denied them. The plan is to have at least annual 'Covid vaccinations', add others to deal with invented 'variants', and change all other vaccines into the mRNA system. Pfizer executives told shareholders at a virtual Barclays Global Healthcare Conference in March, 2021, that the public may need a third dose of 'Covid vaccine', plus regular yearly boosters and the company planned to hike prices to milk the profits in a 'significant opportunity for our vaccine'. These are the professional liars, cheats and opportunists who are telling you their 'vaccine' is safe. Given this volume of mRNA planned to be infused into the human body and its ability to then replicate we will have a transformation of human genetics from biological to synthetic biological – exactly the long-time Cult plan for reasons we'll see – and many will die. Sherri Tenpenny said of this replication:

It's like having an on-button but no off-button and that whole mechanism ... they actually give it a name and they call it the Trojan horse mechanism, because it allows that [synthetic] virus and that piece of that [synthetic] virus to get inside of your cells, start to replicate and even get inserted into other parts of your DNA as a Trojan-horse.

Ask the overwhelming majority of people who have the 'vaccine' what they know about the contents and what they do and they would reply: 'The government says it will stop me getting the virus.' Governments give that false impression on purpose to increase take-up. You can read Sherri Tenpenny's detailed analysis of the health consequences in her blog at [Vaxxter.com](https://vaxxter.com), but in summary these are some of them. She highlights the statement by Bill Gates about how human beings can become their own 'vaccine manufacturing machine'. The man is insane. ['Vaccine'-generated] 'antibodies' carry synthetic messenger RNA into the cells and the damage starts, Tenpenny contends, and she says that lungs can be adversely affected through varying degrees of pus and bleeding which

obviously affects breathing and would be dubbed 'Covid-19'. Even more sinister was the impact of 'antibodies' on macrophages, a white blood cell of the immune system. They consist of Type 1 and Type 2 which have very different functions. She said Type 1 are 'hyper-vigilant' white blood cells which 'gobble up' bacteria etc. However, in doing so, this could cause inflammation and in extreme circumstances be fatal. She says these affects are mitigated by Type 2 macrophages which kick in to calm down the system and stop it going rogue. They clear up dead tissue debris and reduce inflammation that the Type 1 'fire crews' have caused. Type 1 kills the infection and Type 2 heals the damage, she says. This is her punchline with regard to 'Covid vaccinations': She says that mRNA 'antibodies' block Type 2 macrophages by attaching to them and deactivating them. This meant that when the Type 1 response was triggered by infection there was nothing to stop that getting out of hand by calming everything down. There's an on-switch, but no off-switch, she says. What follows can be 'over and out, see you when I see you'.

Genetic suicide

Tenpenny also highlights the potential for autoimmune disease – the body attacking itself – which has been associated with vaccines since they first appeared. Infusing a synthetic foreign substance into cells could cause the immune system to react in a panic believing that the body is being overwhelmed by an invader (it is) and the consequences can again be fatal. There is an autoimmune response known as a 'cytokine storm' which I have likened to a homeowner panicked by an intruder and picking up a gun to shoot randomly in all directions before turning the fire on himself. The immune system unleashes a storm of inflammatory response called cytokines to a threat and the body commits hara-kiri. The lesson is that you mess with the body's immune response at your peril and these 'vaccines' seriously – fundamentally – mess with immune response. Tenpenny refers to a consequence called anaphylactic shock which is a severe and highly dangerous allergic reaction when the immune system

floods the body with chemicals. She gives the example of having a bee sting which primes the immune system and makes it sensitive to those chemicals. When people are stung again maybe years later the immune response can be so powerful that it leads to anaphylactic shock. Tenpenny relates this 'shock' with regard to the 'Covid vaccine' to something called polyethylene glycol or PEG. Enormous numbers of people have become sensitive to this over decades of use in a whole range of products and processes including food, drink, skin creams and 'medicine'. Studies have claimed that some 72 percent of people have antibodies triggered by PEG compared with two percent in the 1960s and allergic hypersensitive reactions to this become a gathering cause for concern. Tenpenny points out that the 'mRNA vaccine' is coated in a 'bubble' of polyethylene glycol which has the potential to cause anaphylactic shock through immune sensitivity. Many reports have appeared of people reacting this way after having the 'Covid vaccine'. What do we think is going to happen as humanity has more and more of these 'vaccines'? Tenpenny said: 'All these pictures we have seen with people with these rashes ... these weepy rashes, big reactions on their arms and things like that – it's an acute allergic reaction most likely to the polyethylene glycol that you've been previously primed and sensitised to.'

Those who have not studied the conspiracy and its perpetrators at length might think that making the population sensitive to PEG and then putting it in these 'vaccines' is just a coincidence. It is not. It is instead testament to how carefully and coldly-planned current events have been and the scale of the conspiracy we are dealing with. Tenpenny further explains that the 'vaccine' mRNA procedure can breach the blood-brain barrier which protects the brain from toxins and other crap that will cause malfunction. In this case they could make two proteins corrupt brain function to cause Amyotrophic lateral sclerosis (ALS), a progressive nervous system disease leading to loss of muscle control, and frontal lobe degeneration – Alzheimer's and dementia. Immunologist J. Bart Classon published a paper connecting mRNA 'vaccines' to prion

disease which can lead to Alzheimer's and other forms of neurodegenerative disease while others have pointed out the potential to affect the placenta in ways that make women infertile. This will become highly significant in the next chapter when I will discuss other aspects of this non-vaccine that relate to its nanotechnology and transmission from the injected to the uninjected.

Qualified in idiocy

Tenpenny describes how research has confirmed that these 'vaccine'-generated antibodies can interact with a range of other tissues in the body and attack many other organs including the lungs. 'This means that if you have a hundred people standing in front of you that all got this shot they could have a hundred different symptoms.' Anyone really think that Cult gofers like the Queen, Tony Blair, Christopher Whitty, Anthony Fauci, and all the other psychopaths have really had this 'vaccine' in the pictures we've seen? Not a bloody chance. Why don't doctors all tell us about all these dangers and consequences of the 'Covid vaccine'? Why instead do they encourage and pressure patients to have the shot? Don't let's think for a moment that doctors and medical staff can't be stupid, lazy, and psychopathic and that's without the financial incentives to give the jab. Tenpenny again:

Some people are going to die from the vaccine directly but a large number of people are going to start to get horribly sick and get all kinds of autoimmune diseases 42 days to maybe a year out. What are they going to do, these stupid doctors who say; 'Good for you for getting that vaccine.' What are they going to say; 'Oh, it must be a mutant, we need to give an extra dose of that vaccine.'

Because now the vaccine, instead of one dose or two doses we need three or four because the stupid physicians aren't taking the time to learn anything about it. If I can learn this sitting in my living room reading a 19 page paper and several others so can they. There's nothing special about me, I just take the time to do it.

Remember how Sara Kayat, the NHS and TV doctor, said that the 'Covid vaccine' would '100 percent prevent hospitalisation and death'. Doctors can be idiots like every other profession and they

should not be worshipped as infallible. They are not and far from it. Behind many medical and scientific 'experts' lies an uninformed prat trying to hide themselves from you although in the 'Covid' era many have failed to do so as with UK narrative-repeating 'TV doctor' Hilary Jones. Pushing back against the minority of proper doctors and scientists speaking out against the 'vaccine' has been the entire edifice of the Cult global state in the form of governments, medical systems, corporations, mainstream media, Silicon Valley, and an army of compliant doctors, medical staff and scientists willing to say anything for money and to enhance their careers by promoting the party line. If you do that you are an 'expert' and if you won't you are an 'anti-vaxxer' and 'Covidiot'. The pressure to be 'vaccinated' is incessant. We have even had reports claiming that the 'vaccine' can help cure cancer and Alzheimer's and make the lame walk. I am waiting for the announcement that it can bring you coffee in the morning and cook your tea. Just as the symptoms of 'Covid' seem to increase by the week so have the miracles of the 'vaccine'. American supermarket giant Kroger Co. offered nearly 500,000 employees in 35 states a \$100 bonus for having the 'vaccine' while donut chain Krispy Kreme promised 'vaccinated' customers a free glazed donut every day for the rest of 2021. Have your DNA changed and you will get a doughnut although we might not have to give you them for long. Such offers and incentives confirm the desperation.

Perhaps the worse vaccine-stunt of them all was UK 'Health' Secretary Matt-the-prat Hancock on live TV after watching a clip of someone being 'vaccinated' when the roll-out began. Hancock faked tears so badly it was embarrassing. Brain-of-Britain Piers Morgan, the lockdown-supporting, 'vaccine' supporting, 'vaccine' passport-supporting, TV host played along with Hancock – 'You're quite emotional about that' he said in response to acting so atrocious it would have been called out at a school nativity which will presumably today include Mary and Jesus in masks, wise men keeping their camels six feet apart, and shepherds under tent arrest. System-serving Morgan tweeted this: 'Love the idea of covid vaccine passports for everywhere: flights, restaurants, clubs, football, gyms,

shops etc. It's time covid-denying, anti-vaxxer loonies had their bullsh*t bluff called & bar themselves from going anywhere that responsible citizens go.' If only I could aspire to his genius. To think that Morgan, who specialises in shouting over anyone he disagrees with, was lauded as a free speech hero when he lost his job after storming off the set of his live show like a child throwing his dolly out of the pram. If he is a free speech hero we are in real trouble. I have no idea what 'bullsh*t' means, by the way, the * throws me completely.

The Cult is desperate to infuse its synthetic DNA-changing concoction into everyone and has been using every lie, trick and intimidation to do so. The question of '*Why?*' we shall now address.

CHAPTER TEN

Human 2.0

I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted –
Alan Turing (1912-1954), the ‘Father of artificial intelligence’

I have been exposing for decades the plan to transform the human body from a biological to a synthetic-biological state. The new human that I will call Human 2.0 is planned to be connected to artificial intelligence and a global AI ‘Smart Grid’ that would operate as one global system in which AI would control everything from your fridge to your heating system to your car to your mind. Humans would no longer be ‘human’, but post-human and sub-human, with their thinking and emotional processes replaced by AI.

What I said sounded crazy and beyond science fiction and I could understand that. To any balanced, rational, mind it *is* crazy. Today, however, that world is becoming reality and it puts the ‘Covid vaccine’ into its true context. Ray Kurzweil is the ultra-Zionist ‘computer scientist, inventor and futurist’ and co-founder of the Singularity University. Singularity refers to the merging of humans with machines or ‘transhumanism’. Kurzweil has said humanity would be connected to the cyber ‘cloud’ in the period of the ever-recurring year of 2030:

Our thinking ... will be a hybrid of biological and non-biological thinking ... humans will be able to extend their limitations and ‘think in the cloud’ ... We’re going to put gateways to the

cloud in our brains ... We're going to gradually merge and enhance ourselves ... In my view, that's the nature of being human – we transcend our limitations. As the technology becomes vastly superior to what we are then the small proportion that is still human gets smaller and smaller and smaller until it's just utterly negligible.

They are trying to sell this end-of-humanity-as-we-know-it as the next stage of 'evolution' when we become super-human and 'like the gods'. They are lying to you. Shocked, eh? The population, and again especially the young, have been manipulated into addiction to technologies designed to enslave them for life. First they induced an addiction to smartphones (holdables); next they moved to technology on the body (wearables); and then began the invasion of the body (implantables). I warned way back about the plan for microchipped people and we are now entering that era. We should not be diverted into thinking that this refers only to chips we can see. Most important are the nanochips known as smart dust, neural dust and nanobots which are far too small to be seen by the human eye. Nanotechnology is everywhere, increasingly in food products, and released into the atmosphere by the geoengineering of the skies funded by Bill Gates to 'shut out the Sun' and 'save the planet from global warming'. Gates has been funding a project to spray millions of tonnes of chalk (calcium carbonate) into the stratosphere over Sweden to 'dim the Sun' and cool the Earth. Scientists warned the move could be disastrous for weather systems in ways no one can predict and opposition led to the Swedish space agency announcing that the 'experiment' would not be happening as planned in the summer of 2021; but it shows where the Cult is going with dimming the impact of the Sun and there's an associated plan to change the planet's atmosphere. Who gives psychopath Gates the right to dictate to the entire human race and dismantle planetary systems? The world will not be safe while this man is at large.

The global warming hoax has made the Sun, like the gas of life, something to fear when both are essential to good health and human survival (more inversion). The body transforms sunlight into vital vitamin D through a process involving ... *cholesterol*. This is the cholesterol we are also told to fear. We are urged to take Big Pharma

statin drugs to reduce cholesterol and it's all systematic. Reducing cholesterol means reducing vitamin D uptake with all the multiple health problems that will cause. At least if you take statins long term it saves the government from having to pay you a pension. The delivery system to block sunlight is widely referred to as chemtrails although these have a much deeper agenda, too. They appear at first to be contrails or condensation trails streaming from aircraft into cold air at high altitudes. Contrails disperse very quickly while chemtrails do not and spread out across the sky before eventually their content falls to earth. Many times I have watched aircraft cross-cross a clear blue sky releasing chemtrails until it looks like a cloudy day. Chemtrails contain many things harmful to humans and the natural world including toxic heavy metals, aluminium (see Alzheimer's) and nanotechnology. Ray Kurzweil reveals the reason without actually saying so: 'Nanobots will infuse all the matter around us with information. Rocks, trees, everything will become these intelligent creatures.' How do you deliver that? *From the sky*. Self-replicating nanobots would connect everything to the Smart Grid. The phenomenon of Morgellons disease began in the chemtrail era and the correlation has led to it being dubbed the 'chemtrail disease'. Self-replicating fibres appear in the body that can be pulled out through the skin. Morgellons fibres continue to grow outside the body and have a form of artificial intelligence. I cover this at greater length in *Phantom Self*.

'Vaccine' operating system

'Covid vaccines' with their self-replicating synthetic material are also designed to make the connection between humanity and Kurzweil's 'cloud'. American doctor and dedicated campaigner for truth, Carrie Madej, an Internal Medicine Specialist in Georgia with more than 20 years medical experience, has highlighted the nanotechnology aspect of the fake 'vaccines'. She explains how one of the components in at least the Moderna and Pfizer synthetic potions are 'lipid nanoparticles' which are 'like little tiny computer bits' – a 'sci-fi substance' known as nanobots and hydrogel which can be 'triggered

at any moment to deliver its payload' and act as 'biosensors'. The synthetic substance had 'the ability to accumulate data from your body like your breathing, your respiration, thoughts and emotions, all kind of things' and each syringe could carry a *million* nanobots:

This substance because it's like little bits of computers in your body, crazy, but it's true, it can do that, [and] obviously has the ability to act through Wi-Fi. It can receive and transmit energy, messages, frequencies or impulses. That issue has never been addressed by these companies. What does that do to the human?

Just imagine getting this substance in you and it can react to things all around you, the 5G, your smart device, your phones, what is happening with that? What if something is triggering it, too, like an impulse, a frequency? We have something completely foreign in the human body.

Madej said her research revealed that electromagnetic (EMF) frequencies emitted by phones and other devices had increased dramatically in the same period of the 'vaccine' rollout and she was seeing more people with radiation problems as 5G and other electromagnetic technology was expanded and introduced to schools and hospitals. She said she was 'floored with the EMF coming off' the devices she checked. All this makes total sense and syncs with my own work of decades when you think that Moderna refers in documents to its mRNA 'vaccine' as an 'operating system':

Recognizing the broad potential of mRNA science, we set out to create an mRNA technology platform that functions very much like an operating system on a computer. It is designed so that it can plug and play interchangeably with different programs. In our case, the 'program' or 'app' is our mRNA drug – the unique mRNA sequence that codes for a protein ...

... Our MRNA Medicines – 'The 'Software Of Life': When we have a concept for a new mRNA medicine and begin research, fundamental components are already in place. Generally, the only thing that changes from one potential mRNA medicine to another is the coding region – the actual genetic code that instructs ribosomes to make protein. Utilizing these instruction sets gives our investigational mRNA medicines a software-like quality. We also have the ability to combine different mRNA sequences encoding for different proteins in a single mRNA investigational medicine.

Who needs a real ‘virus’ when you can create a computer version to justify infusing your operating system into the entire human race on the road to making living, breathing people into cyborgs? What is missed with the ‘vaccines’ is the *digital* connection between synthetic material and the body that I highlighted earlier with the study that hacked a computer with human DNA. On one level the body is digital, based on mathematical codes, and I’ll have more about that in the next chapter. Those who ridiculously claim that mRNA ‘vaccines’ are not designed to change human genetics should explain the words of Dr Tal Zaks, chief medical officer at Moderna, in a 2017 TED talk. He said that over the last 30 years ‘we’ve been living this phenomenal digital scientific revolution, and I’m here today to tell you, that we are actually *hacking the software of life*, and that it’s changing the way we think about prevention and treatment of disease’:

In every cell there’s this thing called messenger RNA, or mRNA for short, that transmits the critical information from the DNA in our genes to the protein, which is really the stuff we’re all made out of. This is the critical information that determines what the cell will do. So we think about it as an operating system. So if you could change that, if you could introduce a line of code, or change a line of code, it turns out, that has profound implications for everything, from the flu to cancer.

Zaks should more accurately have said that this has profound implications for the human genetic code and the nature of DNA. Communications within the body go both ways and not only one. But, hey, no, the ‘Covid vaccine’ will not affect your genetics. Cult fact-checkers say so even though the man who helped to develop the mRNA technique says that it does. Zaks said in 2017:

If you think about what it is we’re trying to do. We’ve taken information and our understanding of that information and how that information is transmitted in a cell, and we’ve taken our understanding of medicine and how to make drugs, and we’re fusing the two. We think of it as information therapy.

I have been writing for decades that the body is an information field communicating with itself and the wider world. This is why

radiation which is information can change the information field of body and mind through phenomena like 5G and change their nature and function. 'Information therapy' means to change the body's information field and change the way it operates. DNA is a receiver-transmitter of information and can be mutated by information like mRNA synthetic messaging. Technology to do this has been ready and waiting in the underground bases and other secret projects to be rolled out when the 'Covid' hoax was played. 'Trials' of such short and irrelevant duration were only for public consumption. When they say the 'vaccine' is 'experimental' that is not true. It may appear to be 'experimental' to those who don't know what's going on, but the trials have already been done to ensure the Cult gets the result it desires. Zaks said that it took decades to sequence the human genome, completed in 2003, but now they could do it in a week. By 'they' he means scientists operating in the public domain. In the secret projects they were sequencing the genome in a week long before even 2003.

Deluge of mRNA

Highly significantly the Moderna document says the guiding premise is that if using mRNA as a medicine works for one disease then it should work for many diseases. They were leveraging the flexibility afforded by their platform and the fundamental role mRNA plays in protein synthesis to pursue mRNA medicines for a broad spectrum of diseases. Moderna is confirming what I was saying through 2020 that multiple 'vaccines' were planned for 'Covid' (and later invented 'variants') and that previous vaccines would be converted to the mRNA system to infuse the body with massive amounts of genetically-manipulating synthetic material to secure a transformation to a synthetic-biological state. The 'vaccines' are designed to kill stunning numbers as part of the long-exposed Cult depopulation agenda and transform the rest. Given this is the goal you can appreciate why there is such hysterical demand for every human to be 'vaccinated' for an alleged 'disease' that has an estimated 'infection' to 'death' ratio of 0.23-0.15 percent. As I write

children are being given the 'vaccine' in trials (their parents are a disgrace) and ever-younger people are being offered the vaccine for a 'virus' that even if you believe it exists has virtually zero chance of harming them. Horrific effects of the 'trials' on a 12-year-old girl were revealed by a family member to be serious brain and gastric problems that included a bowel obstruction and the inability to swallow liquids or solids. She was unable to eat or drink without throwing up, had extreme pain in her back, neck and abdomen, and was paralysed from the waist down which stopped her urinating unaided. When the girl was first taken to hospital doctors said it was all in her mind. She was signed up for the 'trial' by her parents for whom no words suffice. None of this 'Covid vaccine' insanity makes any sense unless you see what the 'vaccine' really is – a body-changer. Synthetic biology or 'SynBio' is a fast-emerging and expanding scientific discipline which includes everything from genetic and molecular engineering to electrical and computer engineering. Synthetic biology is defined in these ways:

- A multidisciplinary area of research that seeks to create new biological parts, devices, and systems, or to redesign systems that are already found in nature.
- The use of a mixture of physical engineering and genetic engineering to create new (and therefore synthetic) life forms.
- An emerging field of research that aims to combine the knowledge and methods of biology, engineering and related disciplines in the design of chemically-synthesized DNA to create organisms with novel or enhanced characteristics and traits (synthetic organisms including humans).

We now have synthetic blood, skin, organs and limbs being developed along with synthetic body parts produced by 3D printers. These are all elements of the synthetic human programme and this comment by Kurzweil's co-founder of the Singularity University,

Peter Diamandis, can be seen in a whole new light with the 'Covid' hoax and the sanctions against those that refuse the 'vaccine':

Anybody who is going to be resisting the progress forward [to transhumanism] is going to be resisting evolution and, fundamentally, they will die out. It's not a matter of whether it's good or bad. It's going to happen.

'Resisting evolution'? What absolute bollocks. The arrogance of these people is without limit. His 'it's going to happen' mantra is another way of saying 'resistance is futile' to break the spirit of those pushing back and we must not fall for it. Getting this genetically-transforming 'vaccine' into everyone is crucial to the Cult plan for total control and the desperation to achieve that is clear for anyone to see. Vaccine passports are a major factor in this and they, too, are a form of resistance is futile. It's NOT. The paper funded by the Rockefeller Foundation for the 2013 'health conference' in China said:

We will interact more with artificial intelligence. The use of robotics, bio-engineering to augment human functioning is already well underway and will advance. Re-engineering of humans into potentially separate and unequal forms through genetic engineering or mixed human-robots raises debates on ethics and equality.

A new demography is projected to emerge after 2030 [that year again] of technologies (robotics, genetic engineering, nanotechnology) producing robots, engineered organisms, 'nanobots' and artificial intelligence (AI) that can self-replicate. Debates will grow on the implications of an impending reality of human designed life.

What is happening today is so long planned. The world army enforcing the will of the world government is intended to be a robot army, not a human one. Today's military and its technologically 'enhanced' troops, pilotless planes and driverless vehicles are just stepping stones to that end. Human soldiers are used as Cult fodder and its time they woke up to that and worked for the freedom of the population instead of their own destruction and their family's destruction – the same with the police. Join us and let's sort this out. The phenomenon of enforce my own destruction is widespread in the 'Covid' era with Woker 'luvvies' in the acting and entertainment

industries supporting 'Covid' rules which have destroyed their profession and the same with those among the public who put signs on the doors of their businesses 'closed due to Covid – stay safe' when many will never reopen. It's a form of masochism and most certainly insanity.

Transgender = transhumanism

When something explodes out of nowhere and is suddenly everywhere it is always the Cult agenda and so it is with the tidal wave of claims and demands that have infiltrated every aspect of society under the heading of 'transgenderism'. The term 'trans' is so 'in' and this is the dictionary definition:

A prefix meaning 'across', 'through', occurring ... in loanwords from Latin, used in particular for denoting movement or conveyance from place to place (transfer; transmit; transplant) or complete change (transform; transmute), or to form adjectives meaning 'crossing', 'on the other side of', or 'going beyond' the place named (transmontane; transnational; trans-Siberian).

Transgender means to go beyond gender and transhuman means to go beyond human. Both are aspects of the Cult plan to transform the human body to a synthetic state with *no gender*. Human 2.0 is not designed to procreate and would be produced technologically with no need for parents. The new human would mean the end of parents and so men, and increasingly women, are being targeted for the deletion of their rights and status. Parental rights are disappearing at an ever-quickenning speed for the same reason. The new human would have no need for men or women when there is no procreation and no gender. Perhaps the transgender movement that appears to be in a permanent state of frenzy might now contemplate on how it is being used. This was never about transgender rights which are only the interim excuse for confusing gender, particularly in the young, on the road to *fusing* gender. Transgender activism is not an end; it is a *means* to an end. We see again the technique of creative destruction in which you destroy the status quo to 'build back better' in the form that you want. The gender status quo had to be

destroyed by persuading the Cult-created Woke mentality to believe that you can have 100 genders or more. A programme for 9 to 12 year olds produced by the Cult-owned BBC promoted the 100 genders narrative. The very idea may be the most monumental nonsense, but it is not what is true that counts, only what you can make people *believe* is true. Once the gender of $2 + 2 = 4$ has been dismantled through indoctrination, intimidation and $2 + 2 = 5$ then the new no-gender normal can take its place with Human 2.0.

Aldous Huxley revealed the plan in his prophetic *Brave New World* in 1932:

Natural reproduction has been done away with and children are created, decanted', and raised in 'hatcheries and conditioning centres'. From birth, people are genetically designed to fit into one of five castes, which are further split into 'Plus' and 'Minus' members and designed to fulfil predetermined positions within the social and economic strata of the World State.

How could Huxley know this in 1932? For the same reason George Orwell knew about the Big Brother state in 1948, Cult insiders I have quoted knew about it in 1969, and I have known about it since the early 1990s. If you are connected to the Cult or you work your balls off to uncover the plan you can predict the future. The process is simple. If there is a plan for the world and nothing intervenes to stop it then it will happen. Thus if you communicate the plan ahead of time you are perceived to have predicted the future, but you haven't. You have revealed the plan which without intervention will become the human future. The whole reason I have done what I have is to alert enough people to inspire an intervention and maybe at last that time has come with the Cult and its intentions now so obvious to anyone with a brain in working order.

The future is here

Technological wombs that Huxley described to replace parent procreation are already being developed and they are only the projects we know about in the public arena. Israeli scientists told *The Times of Israel* in March, 2021, that they have grown 250-cell embryos

into mouse fetuses with fully formed organs using artificial wombs in a development they say could pave the way for gestating humans outside the womb. Professor Jacob Hanna of the Weizmann Institute of Science said:

We took mouse embryos from the mother at day five of development, when they are just of 250 cells, and had them in the incubator from day five until day 11, by which point they had grown all their organs.

By day 11 they make their own blood and have a beating heart, a fully developed brain. Anybody would look at them and say, 'this is clearly a mouse foetus with all the characteristics of a mouse.' It's gone from being a ball of cells to being an advanced foetus.

A special liquid is used to nourish embryo cells in a laboratory dish and they float on the liquid to duplicate the first stage of embryonic development. The incubator creates all the right conditions for its development, Hanna said. The liquid gives the embryo 'all the nutrients, hormones and sugars they need' along with a custom-made electronic incubator which controls gas concentration, pressure and temperature. The cutting-edge in the underground bases and other secret locations will be light years ahead of that, however, and this was reported by the London *Guardian* in 2017:

We are approaching a biotechnological breakthrough. Ectogenesis, the invention of a complete external womb, could completely change the nature of human reproduction. In April this year, researchers at the Children's Hospital of Philadelphia announced their development of an artificial womb.

The article was headed 'Artificial wombs could soon be a reality. What will this mean for women?' What would it mean for children is an even bigger question. No mother to bond with only a machine in preparation for a life of soulless interaction and control in a world governed by machines (see the *Matrix* movies). Now observe the calculated manipulations of the 'Covid' hoax as human interaction and warmth has been curtailed by distancing, isolation and fear with people communicating via machines on a scale never seen before.

These are all dots in the same picture as are all the personal assistants, gadgets and children's toys through which kids and adults communicate with AI as if it is human. The AI 'voice' on Sat-Nav should be included. All these things are psychological preparation for the Cult endgame. Before you can make a physical connection with AI you have to make a psychological connection and that is what people are being conditioned to do with this ever gathering human-AI interaction. Movies and TV programmes depicting the transhuman, robot dystopia relate to a phenomenon known as 'pre-emptive programming' in which the world that is planned is portrayed everywhere in movies, TV and advertising. This is conditioning the conscious and subconscious mind to become familiar with the planned reality to dilute resistance when it happens for real. What would have been a shock such is the change is made less so. We have young children put on the road to transgender transition surgery with puberty blocking drugs at an age when they could never be able to make those life-changing decisions.

Rachel Levine, a professor of paediatrics and psychiatry who believes in treating children this way, became America's highest-ranked openly-transgender official when she was confirmed as US Assistant Secretary at the Department of Health and Human Services after being nominated by Joe Biden (the Cult). Activists and governments press for laws to deny parents a say in their children's transition process so the kids can be isolated and manipulated into agreeing to irreversible medical procedures. A Canadian father Robert Hoogland was denied bail by the Vancouver Supreme Court in 2021 and remained in jail for breaching a court order that he stay silent over his young teenage daughter, a minor, who was being offered life-changing hormone therapy without parental consent. At the age of 12 the girl's 'school counsellor' said she may be transgender, referred her to a doctor and told the school to treat her like a boy. This is another example of state-serving schools imposing ever more control over children's lives while parents have ever less.

Contemptible and extreme child abuse is happening all over the world as the Cult gender-fusion operation goes into warp-speed.

Why the war on men – and now women?

The question about what artificial wombs mean for women should rightly be asked. The answer can be seen in the deletion of women's rights involving sport, changing rooms, toilets and status in favour of people in male bodies claiming to identify as women. I can identify as a mountain climber, but it doesn't mean I can climb a mountain any more than a biological man can be a biological woman. To believe so is a triumph of belief over factual reality which is the very perceptual basis of everything Woke. Women's sport is being destroyed by allowing those with male bodies who say they identify as female to 'compete' with girls and women. Male body 'women' dominate 'women's' competition with their greater muscle mass, bone density, strength and speed. With that disadvantage sport for women loses all meaning. To put this in perspective nearly 300 American high school boys can run faster than the quickest woman sprinter in the world. Women are seeing their previously protected spaces invaded by male bodies simply because they claim to identify as women. That's all they need to do to access all women's spaces and activities under the Biden 'Equality Act' that destroys equality for women with the usual Orwellian Woke inversion. Male sex offenders have already committed rapes in women's prisons after claiming to identify as women to get them transferred. Does this not matter to the Woke 'equality' hypocrites? Not in the least. What matters to Cult manipulators and funders behind transgender activists is to advance gender fusion on the way to the no-gender 'human'. When you are seeking to impose transparent nonsense like this, or the 'Covid' hoax, the only way the nonsense can prevail is through censorship and intimidation of dissenters, deletion of factual information, and programming of the unquestioning, bewildered and naive. You don't have to scan the world for long to see that all these things are happening.

Many women's rights organisations have realised that rights and status which took such a long time to secure are being eroded and that it is systematic. Kara Dansky of the global Women's Human Rights Campaign said that Biden's transgender executive order immediately he took office, subsequent orders, and Equality Act legislation that followed 'seek to erase women and girls in the law as a category'. *Exactly*. I said during the long ago-started war on men (in which many women play a crucial part) that this was going to turn into a war on them. The Cult is phasing out *both* male and female genders. To get away with that they are brought into conflict so they are busy fighting each other while the Cult completes the job with no unity of response. Unity, people, *unity*. We need unity everywhere. Transgender is the only show in town as the big step towards the no-gender human. It's not about rights for transgender people and never has been. Woke political correctness is deleting words relating to genders to the same end. Wokers believe this is to be 'inclusive' when the opposite is true. They are deleting words describing gender because gender *itself* is being deleted by Human 2.0. Terms like 'man', 'woman', 'mother' and 'father' are being deleted in the universities and other institutions to be replaced by the *no-gender*, not trans-gender, 'individuals' and 'guardians'. Women's rights campaigner Maria Keffler of Partners for Ethical Care said: 'Children are being taught from kindergarten upward that some boys have a vagina, some girls have a penis, and that kids can be any gender they want to be.' Do we really believe that suddenly countries all over the world at the same time had the idea of having drag queens go into schools or read transgender stories to very young children in the local library? It's coldly-calculated confusion of gender on the way to the fusion of gender. Suzanne Vierling, a psychologist from Southern California, made another important point:

Yesterday's slave woman who endured gynecological medical experiments is today's girl-child being butchered in a booming gender-transitioning sector. Ovaries removed, pushing her into menopause and osteoporosis, uncharted territory, and parents' rights and authority decimated.

The erosion of parental rights is a common theme in line with the Cult plans to erase the very concept of parents and 'ovaries removed, pushing her into menopause' means what? Those born female lose the ability to have children – another way to discontinue humanity as we know it.

Eliminating Human 1.0 (before our very eyes)

To pave the way for Human 2.0 you must phase out Human 1.0. This is happening through plummeting sperm counts and making women infertile through an onslaught of chemicals, radiation (including smartphones in pockets of men) and mRNA 'vaccines'. Common agriculture pesticides are also having a devastating impact on human fertility. I have been tracking collapsing sperm counts in the books for a long time and in 2021 came a book by fertility scientist and reproductive epidemiologist Shanna Swan, *Count Down: How Our Modern World Is Threatening Sperm Counts, Altering Male and Female Reproductive Development and Imperiling the Future of the Human Race*. She reports how the global fertility rate dropped by *half* between 1960 and 2016 with America's birth rate 16 percent below where it needs to be to sustain the population. Women are experiencing declining egg quality, more miscarriages, and more couples suffer from infertility. Other findings were an increase in erectile dysfunction, infant boys developing more genital abnormalities, male problems with conception, and plunging levels of the male hormone testosterone which would explain why so many men have lost their backbone and masculinity. This has been very evident during the 'Covid' hoax when women have been prominent among the Pushbackers and big strapping blokes have bowed their heads, covered their faces with a nappy and quietly submitted. Mind control expert Cathy O'Brien also points to how global education introduced the concept of 'we're all winners' in sport and classrooms: 'Competition was defused, and it in turn defused a sense of fighting back.' This is another version of the 'equity' doctrine in which you drive down rather than raise up. What a contrast in Cult-controlled China with its global ambitions

where the government published plans in January, 2021, to 'cultivate masculinity' in boys from kindergarten through to high school in the face of a 'masculinity crisis'. A government adviser said boys would be soon become 'delicate, timid and effeminate' unless action was taken. Don't expect any similar policy in the targeted West. A 2006 study showed that a 65-year-old man in 2002 had testosterone levels 15 percent lower than a 65-year-old man in 1987 while a 2020 study found a similar story with young adults and adolescents. Men are getting prescriptions for testosterone replacement therapy which causes an even greater drop in sperm count with up to 99 percent seeing sperm counts drop to zero during the treatment. More sperm is defective and malfunctioning with some having two heads or not pursuing an egg.

A class of *synthetic* chemicals known as phthalates are being blamed for the decline. These are found everywhere in plastics, shampoos, cosmetics, furniture, flame retardants, personal care products, pesticides, canned foods and even receipts. Why till receipts? Everyone touches them. Let no one delude themselves that all this is not systematic to advance the long-time agenda for human body transformation. Phthalates mimic hormones and disrupt the hormone balance causing testosterone to fall and genital birth defects in male infants. Animals and fish have been affected in the same way due to phthalates and other toxins in rivers. When fish turn gay or change sex through chemicals in rivers and streams it is a pointer to why there has been such an increase in gay people and the sexually confused. It doesn't matter to me what sexuality people choose to be, but if it's being affected by chemical pollution and consumption then we need to know. Does anyone really think that this is not connected to the transgender agenda, the war on men and the condemnation of male 'toxic masculinity'? You watch this being followed by 'toxic femininity'. It's already happening. When breastfeeding becomes 'chest-feeding', pregnant women become pregnant people along with all the other Woke claptrap you know that the world is going insane and there's a Cult scam in progress. Transgender activists are promoting the Cult agenda while Cult

billionaires support and fund the insanity as they laugh themselves to sleep at the sheer stupidity for which humans must be infamous in galaxies far, far away.

‘Covid vaccines’ and female infertility

We can now see why the ‘vaccine’ has been connected to potential infertility in women. Dr Michael Yeadon, former Vice President and Chief Scientific Advisor at Pfizer, and Dr Wolfgang Wodarg in Germany, filed a petition with the European Medicines Agency in December, 2020, urging them to stop trials for the Pfizer/BioNTech shot and all other mRNA trials until further studies had been done. They were particularly concerned about possible effects on fertility with ‘vaccine’-produced antibodies attacking the protein Syncytin-1 which is responsible for developing the placenta. The result would be infertility ‘of indefinite duration’ in women who have the ‘vaccine’ with the placenta failing to form. Section 10.4.2 of the Pfizer/BioNTech trial protocol says that pregnant women or those who might become so should not have mRNA shots. Section 10.4 warns men taking mRNA shots to ‘be abstinent from heterosexual intercourse’ and not to donate sperm. The UK government said that it *did not know* if the mRNA procedure had an effect on fertility. *Did not know?* These people have to go to jail. UK government advice did not recommend at the start that pregnant women had the shot and said they should avoid pregnancy for at least two months after ‘vaccination’. The ‘advice’ was later updated to pregnant women should only have the ‘vaccine’ if the benefits outweighed the risks to mother and foetus. What the hell is that supposed to mean? Then ‘spontaneous abortions’ began to appear and rapidly increase on the adverse reaction reporting schemes which include only a fraction of adverse reactions. Thousands and ever-growing numbers of ‘vaccinated’ women are describing changes to their menstrual cycle with heavier blood flow, irregular periods and menstruating again after going through the menopause – all links to reproduction effects. Women are passing blood clots and the lining of their uterus while men report erectile dysfunction and blood effects. Most

significantly of all *unvaccinated* women began to report similar menstrual changes after interaction with '*vaccinated*' people and men and children were also affected with bleeding noses, blood clots and other conditions. 'Shedding' is when vaccinated people can emit the content of a vaccine to affect the unvaccinated, but this is different. 'Vaccinated' people were not shedding a 'live virus' allegedly in 'vaccines' as before because the fake 'Covid vaccines' involve synthetic material and other toxicity. Doctors exposing what is happening prefer the term 'transmission' to shedding. Somehow those that have had the shots are transmitting effects to those that haven't. Dr Carrie Madej said the nano-content of the 'vaccines' can 'act like an antenna' to others around them which fits perfectly with my own conclusions. This 'vaccine' transmission phenomenon was becoming known as the book went into production and I deal with this further in the Postscript.

Vaccine effects on sterility are well known. The World Health Organization was accused in 2014 of sterilising millions of women in Kenya with the evidence confirmed by the content of the vaccines involved. The same WHO behind the 'Covid' hoax admitted its involvement for more than ten years with the vaccine programme. Other countries made similar claims. Charges were lodged by Tanzania, Nicaragua, Mexico, and the Philippines. The Gardasil vaccine claimed to protect against a genital 'virus' known as HPV has also been linked to infertility. Big Pharma and the WHO (same thing) are criminal and satanic entities. Then there's the Bill Gates Foundation which is connected through funding and shared interests with 20 pharmaceutical giants and laboratories. He stands accused of directing the policy of United Nations Children's Fund (UNICEF), vaccine alliance GAVI, and other groupings, to advance the vaccine agenda and silence opposition at great cost to women and children. At the same time Gates wants to reduce the global population. Coincidence?

Great Reset = Smart Grid = new human

The Cult agenda I have been exposing for 30 years is now being openly promoted by Cult assets like Gates and Klaus Schwab of the World Economic Forum under code-terms like the 'Great Reset', 'Build Back Better' and 'a rare but narrow window of opportunity to reflect, reimagine, and reset our world'. What provided this 'rare but narrow window of opportunity'? The 'Covid' hoax did. Who created that? *They* did. My books from not that long ago warned about the planned 'Internet of Things' (IoT) and its implications for human freedom. This was the plan to connect all technology to the Internet and artificial intelligence and today we are way down that road with an estimated 36 billion devices connected to the World Wide Web and that figure is projected to be 76 billion by 2025. I further warned that the Cult planned to go beyond that to the Internet of *Everything* when the human brain was connected via AI to the Internet and Kurzweil's 'cloud'. Now we have Cult operatives like Schwab calling for precisely that under the term 'Internet of Bodies', a fusion of the physical, digital and biological into one centrally-controlled Smart Grid system which the Cult refers to as the 'Fourth Industrial Revolution'. They talk about the 'biological', but they really mean the synthetic-biological which is required to fully integrate the human body and brain into the Smart Grid and artificial intelligence planned to replace the human mind. We have everything being synthetically manipulated including the natural world through GMO and smart dust, the food we eat and the human body itself with synthetic 'vaccines'. I said in *The Answer* that we would see the Cult push for synthetic meat to replace animals and in February, 2021, the so predictable psychopath Bill Gates called for the introduction of synthetic meat to save us all from 'climate change'. The climate hoax just keeps on giving like the 'Covid' hoax. The war on meat by vegan activists is a carbon (oops, sorry) copy of the manipulation of transgender activists. They have no idea (except their inner core) that they are being used to promote and impose the agenda of the Cult or that they are only the *vehicle* and not the *reason*. This is not to say those who choose not to eat meat shouldn't be respected and supported in that right, but there are ulterior motives

for those in power. A *Forbes* article in December, 2019, highlighted the plan so beloved of Schwab and the Cult under the heading: 'What Is The Internet of Bodies? And How Is It Changing Our World?' The article said the human body is the latest data platform (remember 'our vaccine is an operating system'). *Forbes* described the plan very accurately and the words could have come straight out of my books from long before:

The Internet of Bodies (IoB) is an extension of the IoT and basically connects the human body to a network through devices that are ingested, implanted, or connected to the body in some way. Once connected, data can be exchanged, and the body and device can be remotely monitored and controlled.

They were really describing a human hive mind with human perception centrally-dictated via an AI connection as well as allowing people to be 'remotely monitored and controlled'. Everything from a fridge to a human mind could be directed from a central point by these insane psychopaths and 'Covid vaccines' are crucial to this. *Forbes* explained the process I mentioned earlier of holdable and wearable technology followed by implantable. The article said there were three generations of the Internet of Bodies that include:

- Body external: These are wearable devices such as Apple Watches or Fitbits that can monitor our health.
- Body internal: These include pacemakers, cochlear implants, and digital pills that go inside our bodies to monitor or control various aspects of health.
- Body embedded: The third generation of the Internet of Bodies is embedded technology where technology and the human body are melded together and have a real-time connection to a remote machine.

Forbes noted the development of the Brain Computer Interface (BCI) which merges the brain with an external device for monitoring and controlling in real-time. 'The ultimate goal is to help restore function to individuals with disabilities by using brain signals rather than conventional neuromuscular pathways.' Oh, do fuck off. The goal of brain interface technology is controlling human thought and emotion from the central point in a hive mind serving its masters wishes. Many people are now agreeing to be chipped to open doors without a key. You can recognise them because they'll be wearing a mask, social distancing and lining up for the 'vaccine'. The Cult plans a Great Reset money system after they have completed the demolition of the global economy in which 'money' will be exchanged through communication with body operating systems. Rand Corporation, a Cult-owned think tank, said of the Internet of Bodies or IoB:

Internet of Bodies technologies fall under the broader IoT umbrella. But as the name suggests, IoB devices introduce an even more intimate interplay between humans and gadgets. IoB devices monitor the human body, collect health metrics and other personal information, and transmit those data over the Internet. Many devices, such as fitness trackers, are already in use ... IoB devices ... and those in development can track, record, and store users' whereabouts, bodily functions, and what they see, hear, and even think.

Schwab's World Economic Forum, a long-winded way of saying 'fascism' or 'the Cult', has gone full-on with the Internet of Bodies in the 'Covid' era. 'We're entering the era of the Internet of Bodies', it declared, 'collecting our physical data via a range of devices that can be implanted, swallowed or worn'. The result would be a huge amount of health-related data that could improve human wellbeing around the world, and prove crucial in fighting the 'Covid-19 pandemic'. Does anyone think these clowns care about 'human wellbeing' after the death and devastation their pandemic hoax has purposely caused? Schwab and co say we should move forward with the Internet of Bodies because 'Keeping track of symptoms could help us stop the spread of infection, and quickly detect new cases'. How wonderful, but keeping track' is all they are really bothered

about. Researchers were investigating if data gathered from smartwatches and similar devices could be used as viral infection alerts by tracking the user's heart rate and breathing. Schwab said in his 2018 book *Shaping the Future of the Fourth Industrial Revolution*:

The lines between technologies and beings are becoming blurred and not just by the ability to create lifelike robots or synthetics. Instead it is about the ability of new technologies to literally become part of us. Technologies already influence how we understand ourselves, how we think about each other, and how we determine our realities. As the technologies ... give us deeper access to parts of ourselves, we may begin to integrate digital technologies into our bodies.

You can see what the game is. Twenty-four hour control and people – if you could still call them that – would never know when something would go ping and take them out of circulation. It's the most obvious rush to a global fascist dictatorship and the complete submission of humanity and yet still so many are locked away in their Cult-induced perceptual coma and can't see it.

Smart Grid control centres

The human body is being transformed by the 'vaccines' and in other ways into a synthetic cyborg that can be attached to the global Smart Grid which would be controlled from a central point and other sub-locations of Grid manipulation. Where are these planned to be? Well, China for a start which is one of the Cult's biggest centres of operation. The technological control system and technocratic rule was incubated here to be unleashed across the world after the 'Covid' hoax came out of China in 2020. Another Smart Grid location that will surprise people new to this is Israel. I have exposed in *The Trigger* how Sabbatian technocrats, intelligence and military operatives were behind the horrors of 9/11 and not 19 Arab hijackers' who somehow manifested the ability to pilot big passenger airliners when instructors at puddle-jumping flying schools described some of them as a joke. The 9/11 attacks were made possible through control of civilian and military air computer systems and those of the White House, Pentagon and connected agencies. See *The Trigger* – it

will blow your mind. The controlling and coordinating force were the Sabbatian networks in Israel and the United States which by then had infiltrated the entire US government, military and intelligence system. The real name of the American Deep State is 'Sabbatian State'. Israel is a tiny country of only nine million people, but it is one of the global centres of cyber operations and fast catching Silicon Valley in importance to the Cult. Israel is known as the 'start-up nation' for all the cyber companies spawned there with the Sabbatian specialisation of 'cyber security' that I mentioned earlier which gives those companies access to computer systems of their clients in real time through 'backdoors' written into the coding when security software is downloaded. The Sabbatian centre of cyber operations outside Silicon Valley is the Israeli military Cyber Intelligence Unit, the biggest infrastructure project in Israel's history, headquartered in the desert-city of Beersheba and involving some 20,000 'cyber soldiers'. Here are located a literal army of Internet trolls scanning social media, forums and comment lists for anyone challenging the Cult agenda. The UK military has something similar with its 77th Brigade and associated operations. The Beersheba complex includes research and development centres for other Cult operations such as Intel, Microsoft, IBM, Google, Apple, Hewlett-Packard, Cisco Systems, Facebook and Motorola. Techcrunch.com ran an article about the Beersheba global Internet technology centre headlined 'Israel's desert city of Beersheba is turning into a cybertech oasis':

The military's massive relocation of its prestigious technology units, the presence of multinational and local companies, a close proximity to Ben Gurion University and generous government subsidies are turning Beersheba into a major global cybertech hub. Beersheba has all of the ingredients of a vibrant security technology ecosystem, including Ben Gurion University with its graduate program in cybersecurity and Cyber Security Research Center, and the presence of companies such as EMC, Deutsche Telekom, PayPal, Oracle, IBM, and Lockheed Martin. It's also the future home of the INCB (Israeli National Cyber Bureau); offers a special income tax incentive for cyber security companies, and was the site for the relocation of the army's intelligence corps units.

Sabbatians have taken over the cyber world through the following process: They scan the schools for likely cyber talent and develop them at Ben Gurion University and their period of conscription in the Israeli Defense Forces when they are stationed at the Beersheba complex. When the cyber talented officially leave the army they are funded to start cyber companies with technology developed by themselves or given to them by the state. Much of this is stolen through backdoors of computer systems around the world with America top of the list. Others are sent off to Silicon Valley to start companies or join the major ones and so we have many major positions filled by apparently 'Jewish' but really Sabbatian operatives. Google, YouTube and Facebook are all run by 'Jewish' CEOs while Twitter is all but run by ultra-Zionist hedge-fund shark Paul Singer. At the centre of the Sabbatian global cyber web is the Israeli army's Unit 8200 which specialises in hacking into computer systems of other countries, inserting viruses, gathering information, instigating malfunction, and even taking control of them from a distance. A long list of Sabbatians involved with 9/11, Silicon Valley and Israeli cyber security companies are operatives of Unit 8200. This is not about Israel. It's about the Cult. Israel is planned to be a Smart Grid hub as with China and what is happening at Beersheba is not for the benefit of Jewish people who are treated disgustingly by the Sabbatian elite that control the country. A glance at the Nuremberg Codes will tell you that.

The story is much bigger than 'Covid', important as that is to where we are being taken. Now, though, it's time to really strap in. There's more ... much more ...

CHAPTER ELEVEN

Who controls the Cult?

Awake, arise or be forever fall'n
John Milton, *Paradise Lost*

I have exposed this far the level of the Cult conspiracy that operates in the world of the seen and within the global secret society and satanic network which operates in the shadows one step back from the seen. The story, however, goes much deeper than that.

The 'Covid' hoax is major part of the Cult agenda, but only part, and to grasp the biggest picture we have to expand our attention beyond the realm of human sight and into the infinity of possibility that we cannot see. It is from here, ultimately, that humanity is being manipulated into a state of total control by the force which dictates the actions of the Cult. How much of reality can we see? Next to damn all is the answer. We may appear to see all there is to see in the 'space' our eyes survey and observe, but little could be further from the truth. The human 'world' is only a tiny band of frequency that the body's visual and perceptual systems can decode into *perception* of a 'world'. According to mainstream science the electromagnetic spectrum is 0.005 percent of what exists in the Universe ([Fig 10](#)). The maximum estimate I have seen is 0.5 percent and either way it's miniscule. I say it is far, far, smaller even than 0.005 percent when you compare reality we see with the totality of reality that we don't. Now get this if you are new to such information: Visible light, the only band of frequency that we can see, is a *fraction* of the 0.005

percent (Fig 11 overleaf). Take this further and realise that our universe is one of infinite universes and that universes are only a fragment of overall reality – *infinite* reality. Then compare that with the almost infinitesimal frequency band of visible light or human sight. You see that humans are as near blind as it is possible to be without actually being so. Artist and filmmaker, Sergio Toporek, said:

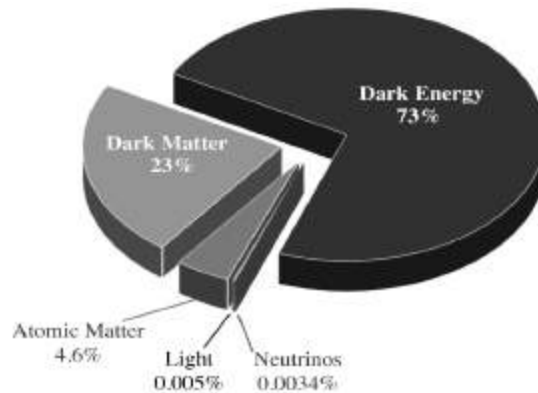


Figure 10: Humans can perceive such a tiny band of visual reality it's laughable.

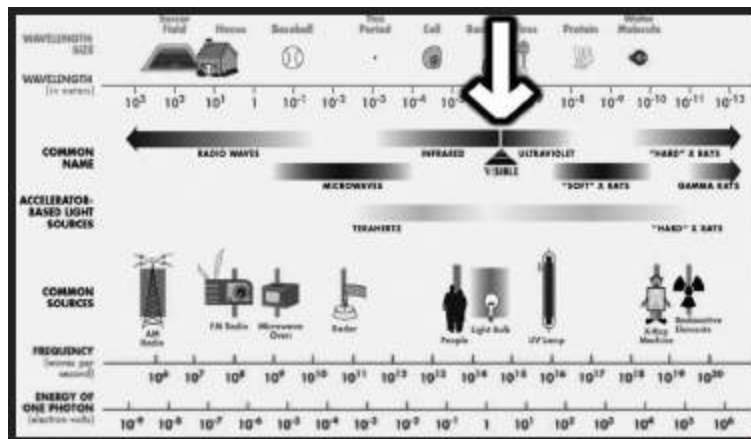


Figure 11: We can see a smear of the 0.005 percent electromagnetic spectrum, but we still know it all. Yep, makes sense.

Consider that you can see less than 1% of the electromagnetic spectrum and hear less than 1% of the acoustic spectrum. 90% of the cells in your body carry their own microbial DNA and are not 'you'. The atoms in your body are 99.999999999999999% empty space and none of them are the ones you were born with ... Human beings have 46 chromosomes, two less than a potato.

The existence of the rainbow depends on the conical photoreceptors in your eyes; to animals without cones, the rainbow does not exist. So you don't just look at a rainbow, you create it. This is pretty amazing, especially considering that all the beautiful colours you see represent less than 1% of the electromagnetic spectrum.

Suddenly the 'world' of humans looks a very different place. Take into account, too, that Planet Earth when compared with the projected size of this single universe is the equivalent of a billionth of a pinhead. Imagine the ratio that would be when compared to infinite reality. To think that Christianity once insisted that Earth and humanity were the centre of everything. This background is vital if we are going to appreciate the nature of 'human' and how we can be manipulated by an unseen force. To human visual reality virtually *everything* is unseen and yet the prevailing perception within the institutions and so much of the public is that if we can't see it, touch it, hear it, taste it and smell it then it cannot exist. Such perception is indoctrinated and encouraged by the Cult and its agents because it isolates believers in the strictly limited, village-idiot, realm of the five senses where perceptions can be firewalled and information controlled. Most of those perpetuating the 'this-world-is-all-there-is' insanity are themselves indoctrinated into believing the same delusion. While major players and influencers know that official reality is laughable most of those in science, academia and medicine really believe the nonsense they peddle and teach succeeding generations. Those who challenge the orthodoxy are dismissed as nutters and freaks to protect the manufactured illusion from exposure. Observe the dynamic of the 'Covid' hoax and you will see how that takes the same form. The inner-circle psychopaths knows it's a gigantic scam, but almost the entirety of those imposing their fascist rules believe that 'Covid' is all that they're told it is.

Stolen identity

Ask people who they are and they will give you their name, place of birth, location, job, family background and life story. Yet that is not who they are – it is what they are *experiencing*. The difference is *absolutely crucial*. The true 'I', the eternal, infinite 'I', is consciousness,

a state of being aware. Forget 'form'. That is a vehicle for a brief experience. Consciousness does not come *from* the brain, but *through* the brain and even that is more symbolic than literal. We are awareness, pure awareness, and this is what withdraws from the body at what we call 'death' to continue our eternal beingness, *isness*, in other realms of reality within the limitlessness of infinity or the Biblical 'many mansions in my father's house'. Labels of a human life, man, woman, transgender, black, white, brown, nationality, circumstances and income are not who we are. They are what we are – awareness – is *experiencing* in a brief connection with a band of frequency we call 'human'. The labels are not the self; they are, to use the title of one of my books, a *Phantom Self*. I am not David Icke born in Leicester, England, on April 29th, 1952. I am the consciousness *having that experience*. The Cult and its non-human masters seek to convince us through the institutions of 'education', science, medicine, media and government that what we are *experiencing* is who we *are*. It's so easy to control and direct perception locked away in the bewildered illusions of the five senses with no expanded radar. Try, by contrast, doing the same with a humanity aware of its true self and its true power to consciously create its reality and experience. How is it possible to do this? We do it all day every day. If you perceive yourself as 'little me' with no power to impact upon your life and the world then your life experience will reflect that. You will hand the power you don't think you have to authority in all its forms which will use it to control your experience. This, in turn, will appear to confirm your perception of 'little me' in a self-fulfilling feedback loop. But that is what 'little me' really is – a *perception*. We are all 'big-me', infinite me, and the Cult has to make us forget that if its will is to prevail. We are therefore manipulated and pressured into self-identifying with human labels and not the consciousness/awareness *experiencing* those human labels.

The phenomenon of identity politics is a Cult-instigated manipulation technique to sub-divide previous labels into even smaller ones. A United States university employs this list of letters to

describe student identity: LGBTTTQQFAGPBDSM or lesbian, gay, bisexual, transgender, transsexual, queer, questioning, flexual, asexual, gender-fuck, polyamorous, bondage/discipline, dominance/submission and sadism/masochism. I'm sure other lists are even longer by now as people feel the need to self-identity the 'I' with the minutiae of race and sexual preference. Wokers programmed by the Cult for generations believe this is about 'inclusivity' when it's really the Cult locking them away into smaller and smaller versions of Phantom Self while firewalling them from the influence of their true self, the infinite, eternal 'I'. You may notice that my philosophy which contends that we are all unique points of attention/awareness within the same infinite whole or Oneness is the ultimate non-racism. The very sense of Oneness makes the judgement of people by their body-type, colour or sexuality utterly ridiculous and confirms that racism has no understanding of reality (including anti-white racism). Yet despite my perception of life Cult agents and fast-asleep Wokers label me racist to discredit my information while they are themselves phenomenally racist and sexist. All they see is race and sexuality and they judge people as good or bad, demons or untouchables, by their race and sexuality. All they see is *Phantom Self* and perceive themselves in terms of Phantom Self. They are pawns and puppets of the Cult agenda to focus attention and self-identity in the five senses and play those identities against each other to divide and rule. Columbia University has introduced segregated graduations in another version of social distancing designed to drive people apart and teach them that different racial and cultural groups have nothing in common with each other. The last thing the Cult wants is unity. Again the pump-primers of this will be Cult operatives in the knowledge of what they are doing, but the rest are just the Phantom Self blind leading the Phantom Self blind. We *do* have something in common – we are all *the same consciousness* having different temporary experiences.

What is this 'human'?

Yes, what *is* 'human'? That is what we are supposed to be, right? I mean 'human'? True, but 'human' is the experience not the 'I'. Break it down to basics and 'human' is the way that information is processed. If we are to experience and interact with this band of frequency we call the 'world' we must have a vehicle that operates within that band of frequency. Our consciousness in its prime form cannot do that; it is way beyond the frequency of the human realm. My consciousness or awareness could not tap these keys and pick up the cup in front of me in the same way that radio station A cannot interact with radio station B when they are on different frequencies. The human body is the means through which we have that interaction. I have long described the body as a biological computer which processes information in a way that allows consciousness to experience this reality. The body is a receiver, transmitter and processor of information in a particular way that we call human. We visually perceive only the world of the five senses in a wakened state – that is the limit of the body's visual decoding system. In truth it's not even visual in the way we experience 'visual reality' as I will come to in a moment. We are 'human' because the body processes the information sources of human into a reality and behaviour system that we *perceive* as human. Why does an elephant act like an elephant and not like a human or a duck? The elephant's biological computer is a different information field and processes information according to that program into a visual and behaviour type we call an elephant. The same applies to everything in our reality. These body information fields are perpetuated through procreation (like making a copy of a software program). The Cult wants to break that cycle and intervene technologically to transform the human information field into one that will change what we call humanity. If it can change the human information field it will change the way that field processes information and change humanity both 'physically' and psychologically. Hence the *messenger* (information) RNA 'vaccines' and so much more that is targeting human genetics by changing the body's information – *messaging* – construct through food, drink, radiation, toxicity and other means.

Reality that we experience is nothing like reality as it really is in the same way that the reality people experience in virtual reality games is not the reality they are really living in. The game is only a decoded source of information that appears to be a reality. Our world is also an information construct – a *simulation* (more later). In its base form our reality is a wavefield of information much the same in theme as Wi-Fi. The five senses decode wavefield information into electrical information which they communicate to the brain to decode into holographic (illusory ‘physical’) information. Different parts of the brain specialise in decoding different senses and the information is fused into a reality that appears to be outside of us but is really inside the brain and the genetic structure in general ([Fig 12](#) overleaf). DNA is a receiver-transmitter of information and a vital part of this decoding process and the body’s connection to other realities. Change DNA and you change the way we decode and connect with reality – see ‘Covid vaccines’. Think of computers decoding Wi-Fi. You have information encoded in a radiation field and the computer decodes that information into a very different form on the screen. You can’t see the Wi-Fi until its information is made manifest on the screen and the information on the screen is inside the computer and not outside. I have just described how we decode the ‘human world’. All five senses decode the waveform ‘Wi-Fi’ field into electrical signals and the brain (computer) constructs reality inside the brain and not outside – ‘You don’t just look at a rainbow, you create it’. Sound is a simple example. We don’t hear sound until the brain decodes it. Waveform sound waves are picked up by the hearing sense and communicated to the brain in an electrical form to be decoded into the sounds that we hear. Everything we hear is inside the brain along with everything we see, feel, smell and taste. Words and language are waveform fields generated by our vocal chords which pass through this process until they are decoded by the brain into words that we hear. Different languages are different frequency fields or sound waves generated by vocal chords. Late British philosopher Alan Watts said:

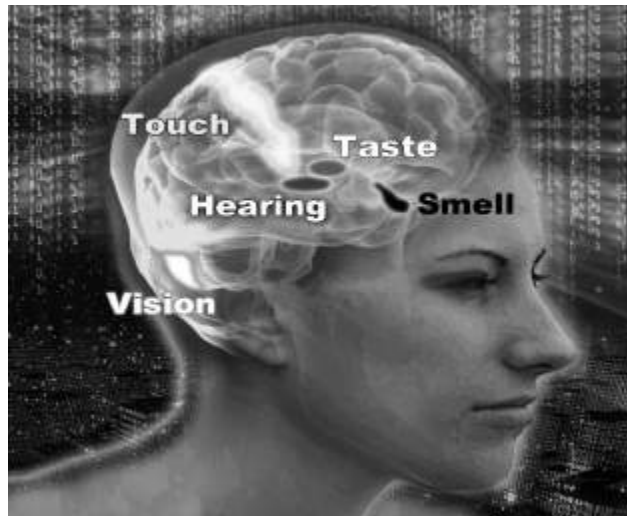


Figure 12: The brain receives information from the five senses and constructs from that our perceived reality.

[Without the brain] the world is devoid of light, heat, weight, solidity, motion, space, time or any other imaginable feature. All these phenomena are interactions, or transactions, of vibrations with a certain arrangement of neurons.

That's exactly what they are and scientist Robert Lanza describes in his book, *Biocentrism*, how we decode electromagnetic waves and energy into visual and 'physical' experience. He uses the example of a flame emitting photons, electromagnetic energy, each pulsing electrically and magnetically:

... these ... invisible electromagnetic waves strike a human retina, and if (and only if) the waves happen to measure between 400 and 700 nano meters in length from crest to crest, then their energy is just right to deliver a stimulus to the 8 million cone-shaped cells in the retina.

Each in turn send an electrical pulse to a neighbour neuron, and on up the line this goes, at 250 mph, until it reaches the ... occipital lobe of the brain, in the back of the head. There, a cascading complex of neurons fire from the incoming stimuli, and we subjectively perceive this experience as a yellow brightness occurring in a place we have been conditioned to call the 'external world'.

You hear what you decode

If a tree falls or a building collapses they make no noise unless someone is there to decode the energetic waves generated by the disturbance into what we call sound. Does a falling tree make a noise? Only if you hear it – *decode* it. Everything in our reality is a frequency field of information operating within the overall ‘Wi-Fi’ field that I call The Field. A vibrational disturbance is generated in The Field by the fields of the falling tree or building. These disturbance waves are what we decode into the sound of them falling. If no one is there to do that then neither will make any noise. Reality is created by the observer – *decoder* – and the *perceptions* of the observer affect the decoding process. For this reason different people – different *perceptions* – will perceive the same reality or situation in a different way. What one may perceive as a nightmare another will see as an opportunity. The question of why the Cult is so focused on controlling human perception now answers itself. All experienced reality is the act of decoding and we don’t experience Wi-Fi until it is decoded on the computer screen. The sight and sound of an Internet video is encoded in the Wi-Fi all around us, but we don’t see or hear it until the computer decodes that information. Taste, smell and touch are all phenomena of the brain as a result of the same process. We don’t taste, smell or feel anything except in the brain and there are pain relief techniques that seek to block the signal from the site of discomfort to the brain because if the brain doesn’t decode that signal we don’t feel pain. Pain is in the brain and only appears to be at the point of impact thanks to the feedback loop between them. We don’t see anything until electrical information from the sight senses is decoded in an area at the back of the brain. If that area is damaged we can go blind when our eyes are perfectly okay. So why do we go blind if we damage an eye? We damage the information processing between the waveform visual information and the visual decoding area of the brain. If information doesn’t reach the brain in a form it can decode then we can’t see the visual reality that it represents. What’s more the brain is decoding only a fraction of the information it receives and the rest is absorbed by the

sub-conscious mind. This explanation is from the science magazine, *Wonderpedia*:

Every second, 11 million sensations crackle along these [brain] pathways ... The brain is confronted with an alarming array of images, sounds and smells which it rigorously filters down until it is left with a manageable list of around 40. Thus 40 sensations per second make up what we perceive as reality.

The 'world' is not what people are told to believe that is it and the inner circles of the Cult *know that*.

Illusory 'physical' reality

We can only see a smear of 0.005 percent of the Universe which is only one of a vast array of universes – 'mansions' – within infinite reality. Even then the brain decodes only 40 pieces of information ('sensations') from a potential *11 million* that we receive every second. Two points strike you from this immediately: The sheer breathtaking stupidity of believing we know anything so rigidly that there's nothing more to know; and the potential for these processes to be manipulated by a malevolent force to control the reality of the population. One thing I can say for sure with no risk of contradiction is that when you can perceive an almost indescribable fraction of infinite reality there is always more to know as in tidal waves of it. Ancient Greek philosopher Socrates was so right when he said that wisdom is to know how little we know. How obviously true that is when you think that we are experiencing a physical world of solidity that is neither physical nor solid and a world of apartness when everything is connected. Cult-controlled 'science' dismisses the so-called 'paranormal' and all phenomena related to that when the 'para'-normal is perfectly normal and explains the alleged 'great mysteries' which dumbfound scientific minds. There is a reason for this. A 'scientific mind' in terms of the mainstream is a material mind, a five-sense mind imprisoned in see it, touch it, hear it, smell it and taste it. Phenomena and happenings that can't be explained that way leave the 'scientific mind' bewildered and the rule is that if they

can't account for why something is happening then it can't, by definition, be happening. I beg to differ. Telepathy is thought waves passing through The Field (think wave disturbance again) to be decoded by someone able to connect with that wavelength (information). For example: You can pick up the thought waves of a friend at any distance and at the very least that will bring them to mind. A few minutes later the friend calls you. 'My god', you say, 'that's incredible – I was just thinking of you.' Ah, but *they* were thinking of *you* before they made the call and that's what you decoded. Native peoples not entrapped in five-sense reality do this so well it became known as the 'bush telegraph'. Those known as psychics and mediums (genuine ones) are doing the same only across dimensions of reality. 'Mind over matter' comes from the fact that matter and mind are the *same*. The state of one influences the state of the other. Indeed one *and* the other are illusions. They are aspects of the same field. Paranormal phenomena are all explainable so why are they still considered 'mysteries' or not happening? Once you go down this road of understanding you begin to expand awareness beyond the five senses and that's the nightmare for the Cult.



Figure 13: Holograms are not solid, but the best ones appear to be.

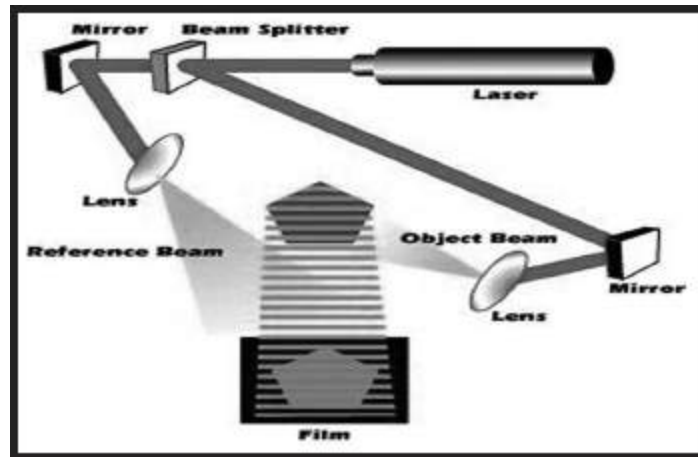


Figure 14: How holograms are created by capturing a waveform version of the subject image.

Holographic 'solidity'

Our reality is not solid, it is holographic. We are now well aware of holograms which are widely used today. Two-dimensional information is decoded into a three-dimensional reality that is not solid although can very much appear to be (Fig 13). Holograms are created with a laser divided into two parts. One goes directly onto a holographic photographic print ('reference beam') and the other takes a waveform image of the subject ('working beam') before being directed onto the print where it 'collides' with the other half of the laser (Fig 14). This creates a *waveform* interference pattern which contains the wavefield information of whatever is being photographed (Fig 15 overleaf). The process can be likened to dropping pebbles in a pond. Waves generated by each one spread out across the water to collide with the others and create a wave representation of where the stones fell and at what speed, weight and distance. A waveform interference pattern of a hologram is akin to the waveform information in The Field which the five senses decode into electrical signals to be decoded by the brain into a holographic illusory 'physical' reality. In the same way when a laser (think human attention) is directed at the waveform interference pattern a three-dimensional version of the subject is projected into apparently 'solid' reality (Fig 16). An amazing trait of holograms reveals more 'paranormal mysteries'. Information of the *whole*

hologram is encoded in waveform in every part of the interference pattern by the way they are created. This means that every *part* of a hologram is a smaller version of the whole. Cut the interference wave-pattern into four and you won't get four parts of the image. You get quarter-sized versions of the *whole* image. The body is a hologram and the same applies. Here we have the basis of acupuncture, reflexology and other forms of healing which identify representations of the whole body in all of the parts, hands, feet, ears, everywhere. Skilled palm readers can do what they do because the information of whole body is encoded in the hand. The concept of as above, so below, comes from this.



Figure 15: A waveform interference pattern that holds the information that transforms into a hologram.



Figure 16: Holographic people including 'Elvis' holographically inserted to sing a duet with Celine Dion.

The question will be asked of why, if solidity is illusory, we can't just walk through walls and each other. The resistance is not solid against solid; it is electromagnetic field against electromagnetic field and we decode this into the *experience* of solid against solid. We should also not underestimate the power of belief to dictate reality. What you believe is impossible *will be*. Your belief impacts on your decoding processes and they won't decode what you think is impossible. What we believe we perceive and what we perceive we experience. 'Can't dos' and 'impossibles' are like a firewall in a computer system that won't put on the screen what the firewall blocks. How vital that is to understanding how human experience has been hijacked. I explain in *The Answer, Everything You Need To Know But Have Never Been Told* and other books a long list of 'mysteries' and 'paranormal' phenomena that are not mysterious and perfectly normal once you realise what reality is and how it works. 'Ghosts' can be seen to pass through 'solid' walls because the walls are not solid and the ghost is a discarnate entity operating on a frequency so different to that of the wall that it's like two radio stations sharing the same space while never interfering with each other. I have seen ghosts do this myself. The apartness of people and objects is also an illusion. Everything is connected by the Field like all sea life is connected by the sea. It's just that within the limits of our visual reality we only 'see' holographic information and not the field of information that connects everything and from which the holographic world is made manifest. If you can only see holographic 'objects' and not the field that connects them they will appear to you as unconnected to each other in the same way that we see the computer while not seeing the Wi-Fi.

What you don't know *can* hurt you

Okay, we return to those 'two worlds' of human society and the Cult with its global network of interconnecting secret societies and satanic groups which manipulate through governments, corporations, media, religions, etc. The fundamental difference between them is *knowledge*. The idea has been to keep humanity

ignorant of the plan for its total enslavement underpinned by a crucial ignorance of reality – who we are and where we are – and how we interact with it. ‘Human’ should be the interaction between our expanded eternal consciousness and the five-sense body experience. We are meant to be *in* this world in terms of the five senses but not *of* this world in relation to our greater consciousness and perspective. In that state we experience the small picture of the five senses within the wider context of the big picture of awareness beyond the five senses. Put another way the five senses see the dots and expanded awareness connects them into pictures and patterns that give context to the apparently random and unconnected. Without the context of expanded awareness the five senses see only apartness and randomness with apparently no meaning. The Cult and its other-dimensional controllers seek to intervene in the frequency realm where five-sense reality is supposed to connect with expanded reality and to keep the two apart (more on this in the final chapter). When that happens five-sense mental and emotional processes are no longer influenced by expanded awareness, or the True ‘I’, and instead are driven by the isolated perceptions of the body’s decoding systems. They are in the world *and* of it. Here we have the human plight and why humanity with its potential for infinite awareness can be so easily manipulatable and descend into such extremes of stupidity.

Once the Cult isolates five-sense mind from expanded awareness it can then program the mind with perceptions and beliefs by controlling information that the mind receives through the ‘education’ system of the formative years and the media perceptual bombardment and censorship of an entire lifetime. Limit perception and a sense of the possible through limiting knowledge by limiting and skewing information while censoring and discrediting that which could set people free. As the title of another of my books says ... *And The Truth Shall Set You Free*. For this reason the last thing the Cult wants in circulation is the truth about anything – especially the reality of the eternal ‘I’ – and that’s why it is desperate to control information. The Cult knows that information becomes perception

which becomes behaviour which, collectively, becomes human society. Cult-controlled and funded mainstream 'science' denies the existence of an eternal 'I' and seeks to dismiss and trash all evidence to the contrary. Cult-controlled mainstream religion has a version of 'God' that is little more than a system of control and dictatorship that employs threats of damnation in an afterlife to control perceptions and behaviour in the here and now through fear and guilt. Neither is true and it's the 'neither' that the Cult wishes to suppress. This 'neither' is that everything is an expression, a point of attention, within an infinite state of consciousness which is the real meaning of the term 'God'.

Perceptual obsession with the 'physical body' and five-senses means that 'God' becomes personified as a bearded bloke sitting among the clouds or a raging bully who loves us if we do what 'he' wants and condemns us to the fires of hell if we don't. These are no more than a 'spiritual' fairy tales to control and dictate events and behaviour through fear of this 'God' which has bizarrely made 'God-fearing' in religious circles a state to be desired. I would suggest that fearing *anything* is not to be encouraged and celebrated, but rather deleted. You can see why 'God fearing' is so beneficial to the Cult and its religions when *they* decide what 'God' wants and what 'God' demands (the Cult demands) that everyone do. As the great American comedian Bill Hicks said satirising a Christian zealot: 'I think what God meant to say.' How much of this infinite awareness ('God') that we access is decided by how far we choose to expand our perceptions, self-identity and sense of the possible. The scale of self-identity reflects itself in the scale of awareness that we can connect with and are influenced by – how much knowing and insight we have instead of programmed perception. You cannot expand your awareness into the infinity of possibility when you believe that you are little me Peter the postman or Mary in marketing and nothing more. I'll deal with this in the concluding chapter because it's crucial to how we turnaround current events.

Where the Cult came from

When I realised in the early 1990s there was a Cult network behind global events I asked the obvious question: When did it start? I took it back to ancient Rome and Egypt and on to Babylon and Sumer in Mesopotamia, the 'Land Between Two Rivers', in what we now call Iraq. The two rivers are the Tigris and Euphrates and this region is of immense historical and other importance to the Cult, as is the land called Israel only 550 miles away by air. There is much more going on with deep esoteric meaning across this whole region. It's not only about 'wars for oil'. Priceless artefacts from Mesopotamia were stolen or destroyed after the American and British invasion of Iraq in 2003 justified by the lies of Boy Bush and Tony Blair (their Cult masters) about non-existent 'weapons of mass destruction'.

Mesopotamia was the location of Sumer (about 5,400BC to 1,750BC), and Babylon (about 2,350BC to 539BC). Sabbatians may have become immensely influential in the Cult in modern times but they are part of a network that goes back into the mists of history. Sumer is said by historians to be the 'cradle of civilisation'. I disagree. I say it was the re-start of what we call human civilisation after cataclysmic events symbolised in part as the 'Great Flood' destroyed the world that existed before. These fantastic upheavals that I have been describing in detail in the books since the early 1990s appear in accounts and legends of ancient cultures across the world and they are supported by geological and biological evidence. Stone tablets found in Iraq detailing the Sumer period say the cataclysms were caused by non-human 'gods' they call the Anunnaki. These are described in terms of extraterrestrial visitations in which knowledge supplied by the Anunnaki is said to have been the source of at least one of the world's oldest writing systems and developments in astronomy, mathematics and architecture that were way ahead of their time. I have covered this subject at length in *The Biggest Secret* and *Children of the Matrix* and the same basic 'Anunnaki' story can be found in Zulu accounts in South Africa where the late and very great Zulu high shaman Credo Mutwa told me that the Sumerian Anunnaki were known by Zulus as the Chitauri or 'children of the serpent'. See my six-hour video interview with Credo on this subject entitled *The*

Reptilian Agenda recorded at his then home near Johannesburg in 1999 which you can watch on the Ickonic media platform.

The Cult emerged out of Sumer, Babylon and Egypt (and elsewhere) and established the Roman Empire before expanding with the Romans into northern Europe from where many empires were savagely imposed in the form of Cult-controlled societies all over the world. Mass death and destruction was their calling card. The Cult established its centre of operations in Europe and European Empires were Cult empires which allowed it to expand into a global force. Spanish and Portuguese colonialists headed for Central and South America while the British and French targeted North America. Africa was colonised by Britain, France, Belgium, the Netherlands, Portugal, Spain, Italy, and Germany. Some like Britain and France moved in on the Middle East. The British Empire was by far the biggest for a simple reason. By now Britain was the headquarters of the Cult from which it expanded to form Canada, the United States, Australia and New Zealand. The Sun never set on the British Empire such was the scale of its occupation. London remains a global centre for the Cult along with Rome and the Vatican although others have emerged in Israel and China. It is no accident that the 'virus' is alleged to have come out of China while Italy was chosen as the means to terrify the Western population into compliance with 'Covid' fascism. Nor that Israel has led the world in 'Covid' fascism and mass 'vaccination'.

You would think that I would mention the United States here, but while it has been an important means of imposing the Cult's will it is less significant than would appear and is currently in the process of having what power it does have deleted. The Cult in Europe has mostly loaded the guns for the US to fire. America has been controlled from Europe from the start through Cult operatives in Britain and Europe. The American Revolution was an illusion to make it appear that America was governing itself while very different forces were pulling the strings in the form of Cult families such as the Rothschilds through the Rockefellers and other subordinates. The Rockefellers are extremely close to Bill Gates and

established both scalpel and drug 'medicine' and the World Health Organization. They play a major role in the development and circulation of vaccines through the Rockefeller Foundation on which Bill Gates said his Foundation is based. Why wouldn't this be the case when the Rockefellers and Gates are on the same team? Cult infiltration of human society goes way back into what we call history and has been constantly expanding and centralising power with the goal of establishing a global structure to dictate everything. Look how this has been advanced in great leaps with the 'Covid' hoax.

The non-human dimension

I researched and observed the comings and goings of Cult operatives through the centuries and even thousands of years as they were born, worked to promote the agenda within the secret society and satanic networks, and then died for others to replace them. Clearly there had to be a coordinating force that spanned this entire period while operatives who would not have seen the end goal in their lifetimes came and went advancing the plan over millennia. I went in search of that coordinating force with the usual support from the extraordinary synchronicity of my life which has been an almost daily experience since 1990. I saw common themes in religious texts and ancient cultures about a non-human force manipulating human society from the hidden. Christianity calls this force Satan, the Devil and demons; Islam refers to the Jinn or Djinn; Zulus have their Chitauri (spelt in other ways in different parts of Africa); and the Gnostic people in Egypt in the period around and before 400AD referred to this phenomena as the 'Archons', a word meaning rulers in Greek. Central American cultures speak of the 'Predators' among other names and the same theme is everywhere. I will use 'Archons' as a collective name for all of them. When you see how their nature and behaviour is described all these different sources are clearly talking about the same force. Gnostics described the Archons in terms of 'luminous fire' while Islam relates the Jinn to 'smokeless fire'. Some refer to beings in form that could occasionally be seen, but the most common of common theme is that they operate from

unseen realms which means almost all existence to the visual processes of humans. I had concluded that this was indeed the foundation of human control and that the Cult was operating within the human frequency band on behalf of this hidden force when I came across the writings of Gnostics which supported my conclusions in the most extraordinary way.

A sealed earthen jar was found in 1945 near the town of Nag Hammadi about 75-80 miles north of Luxor on the banks of the River Nile in Egypt. Inside was a treasure trove of manuscripts and texts left by the Gnostic people some 1,600 years earlier. They included 13 leather-bound papyrus codices (manuscripts) and more than 50 texts written in Coptic Egyptian estimated to have been hidden in the jar in the period of 400AD although the source of the information goes back much further. Gnostics oversaw the Great or Royal Library of Alexandria, the fantastic depository of ancient texts detailing advanced knowledge and accounts of human history. The Library was dismantled and destroyed in stages over a long period with the death-blow delivered by the Cult-established Roman Church in the period around 415AD. The Church of Rome was the Church of Babylon relocated as I said earlier. Gnostics were not a race. They were a way of perceiving reality. Whenever they established themselves and their information circulated the terrorists of the Church of Rome would target them for destruction. This happened with the Great Library and with the Gnostic Cathars who were burned to death by the psychopaths after a long period of oppression at the siege of the Castle of Monségur in southern France in 1244. The Church has always been terrified of Gnostic information which demolishes the official Christian narrative although there is much in the Bible that supports the Gnostic view if you read it in another way. To anyone studying the texts of what became known as the Nag Hammadi Library it is clear that great swathes of Christian and Biblical belief has its origin with Gnostics sources going back to Sumer. Gnostic themes have been twisted to manipulate the perceived reality of Bible believers. Biblical texts have been in the open for centuries where they could be changed while Gnostic

documents found at Nag Hammadi were sealed away and untouched for 1,600 years. What you see is what they wrote.

Use your *pneuma* not your *nous*

Gnosticism and Gnostic come from 'gnosis' which means knowledge, or rather *secret* knowledge, in the sense of spiritual awareness – knowledge about reality and life itself. The desperation of the Cult's Church of Rome to destroy the Gnostics can be understood when the knowledge they were circulating was the last thing the Cult wanted the population to know. Sixteen hundred years later the same Cult is working hard to undermine and silence me for the same reason. The dynamic between knowledge and ignorance is a constant. 'Time' appears to move on, but essential themes remain the same. We are told to 'use your nous', a Gnostic word for head/brain/intelligence. They said, however, that spiritual awakening or 'salvation' could only be secured by expanding awareness *beyond* what they called *nous* and into *pneuma* or Infinite Self. Obviously as I read these texts the parallels with what I have been saying since 1990 were fascinating to me. There is a universal truth that spans human history and in that case why wouldn't we be talking the same language 16 centuries apart? When you free yourself from the perception program of the five senses and explore expanded realms of consciousness you are going to connect with the same information no matter what the perceived 'era' within a manufactured timeline of a single and tiny range of manipulated frequency. Humans working with 'smart' technology or knocking rocks together in caves is only a timeline appearing to operate within the human frequency band. Expanded awareness and the knowledge it holds have always been there whether the era be Stone Age or computer age. We can only access that knowledge by opening ourselves to its frequency which the five-sense prison cell is designed to stop us doing. Gates, Fauci, Whitty, Vallance, Zuckerberg, Brin, Page, Wojcicki, Bezos, and all the others behind the 'Covid' hoax clearly have a long wait before their range of frequency can make that connection given that an open heart is

crucial to that as we shall see. Instead of accessing knowledge directly through expanded awareness it is given to Cult operatives by the secret society networks of the Cult where it has been passed on over thousands of years outside the public arena. Expanded realms of consciousness is where great artists, composers and writers find their inspiration and where truth awaits anyone open enough to connect with it. We need to go there fast.

Archon hijack

A fifth of the Nag Hammadi texts describe the existence and manipulation of the Archons led by a 'Chief Archon' they call 'Yaldabaoth', or the 'Demiurge', and this is the Christian 'Devil', 'Satan', 'Lucifer', and his demons. Archons in Biblical symbolism are the 'fallen ones' which are also referred to as fallen angels after the angels expelled from heaven according to the Abrahamic religions of Judaism, Christianity and Islam. These angels are claimed to tempt humans to 'sin' ongoing and you will see how accurate that symbolism is during the rest of the book. The theme of 'original sin' is related to the 'Fall' when Adam and Eve were 'tempted by the serpent' and fell from a state of innocence and 'obedience' (connection) with God into a state of disobedience (disconnection). The Fall is said to have brought sin into the world and corrupted everything including human nature. Yaldabaoth, the 'Lord Archon', is described by Gnostics as a 'counterfeit spirit', 'The Blind One', 'The Blind God', and 'The Foolish One'. The Jewish name for Yaldabaoth in Talmudic writings is Samael which translates as 'Poison of God', or 'Blindness of God'. You see the parallels. Yaldabaoth in Islamic belief is the Muslim Jinn devil known as Shaytan – Shaytan is Satan as the same themes are found all over the world in every religion and culture. The 'Lord God' of the Old Testament is the 'Lord Archon' of Gnostic manuscripts and that's why he's such a bloodthirsty bastard. Satan is known by Christians as 'the Demon of Demons' and Gnostics called Yaldabaoth the 'Archon of Archons'. Both are known as 'The Deceiver'. We are talking about the same 'bloke' for sure and these common themes

using different names, storylines and symbolism tell a common tale of the human plight.

Archons are referred to in Nag Hammadi documents as mind parasites, inverters, guards, gatekeepers, detainers, judges, pitiless ones and deceivers. The 'Covid' hoax alone is a glaring example of all these things. The Biblical 'God' is so different in the Old and New Testaments because they are not describing the same phenomenon. The vindictive, angry, hate-filled, 'God' of the Old Testament, known as Yahweh, is Yaldabaoth who is depicted in Cult-dictated popular culture as the 'Dark Lord', 'Lord of Time', Lord (Darth) Vader and Dormammu, the evil ruler of the 'Dark Dimension' trying to take over the 'Earth Dimension' in the Marvel comic movie, *Dr Strange*. Yaldabaoth is both the Old Testament 'god' and the Biblical 'Satan'. Gnostics referred to Yaldabaoth as the 'Great Architect of the Universe' and the Cult-controlled Freemason network calls their god 'the 'Great Architect of the Universe' (also Grand Architect). The 'Great Architect' Yaldabaoth is symbolised by the Cult as the all-seeing eye at the top of the pyramid on the Great Seal of the United States and the dollar bill. Archon is encoded in *arch*-itect as it is in *arch*-angels and *arch*-bishops. All religions have the theme of a force for good and force for evil in some sort of spiritual war and there is a reason for that – the theme is true. The Cult and its non-human masters are quite happy for this to circulate. They present themselves as the force for good fighting evil when they are really the force of evil (absence of love). The whole foundation of Cult modus operandi is inversion. They promote themselves as a force for good and anyone challenging them in pursuit of peace, love, fairness, truth and justice is condemned as a satanic force for evil. This has been the game plan throughout history whether the Church of Rome inquisitions of non-believers or 'conspiracy theorists' and 'anti-vaxxers' of today. The technique is the same whatever the timeline era.

Yaldabaoth is revolting (true)

Yaldabaoth and the Archons are said to have revolted against God with Yaldabaoth claiming to *be* God – the *All That Is*. The Old Testament ‘God’ (Yaldabaoth) demanded to be worshipped as such: ‘*I am the LORD, and there is none else, there is no God beside me*’ (Isaiah 45:5). I have quoted in other books a man who said he was the unofficial son of the late Baron Philippe de Rothschild of the Mouton-Rothschild wine producing estates in France who died in 1988 and he told me about the Rothschild ‘revolt from God’. The man said he was given the name Phillip Eugene de Rothschild and we shared long correspondence many years ago while he was living under another identity. He said that he was conceived through ‘occult incest’ which (within the Cult) was ‘normal and to be admired’. ‘Phillip’ told me about his experience attending satanic rituals with rich and famous people whom he names and you can see them and the wider background to Cult Satanism in my other books starting with *The Biggest Secret*. Cult rituals are interactions with Archontic ‘gods’. ‘Phillip’ described Baron Philippe de Rothschild as ‘a master Satanist and hater of God’ and he used the same term ‘revolt from God’ associated with Yaldabaoth/Satan/Lucifer/the Devil in describing the Sabbatian Rothschild dynasty. ‘I played a key role in my family’s revolt from God’, he said. That role was to infiltrate in classic Sabbatian style the Christian Church, but eventually he escaped the mind-prison to live another life. The Cult has been targeting religion in a plan to make worship of the Archons the global one-world religion. Infiltration of Satanism into modern ‘culture’, especially among the young, through music videos, stage shows and other means, is all part of this.

Nag Hammadi texts describe Yaldabaoth and the Archons in their prime form as energy – consciousness – and say they can take form if they choose in the same way that consciousness takes form as a human. Yaldabaoth is called ‘formless’ and represents a deeply inverted, distorted and chaotic state of consciousness which seeks to attached to humans and turn them into a likeness of itself in an attempt at assimilation. For that to happen it has to manipulate

humans into low frequency mental and emotional states that match its own. Archons can certainly appear in human form and this is the origin of the psychopathic personality. The energetic distortion Gnostics called Yaldabaoth is psychopathy. When psychopathic Archons take human form that human will be a psychopath as an expression of Yaldabaoth consciousness. Cult psychopaths are Archons in human form. The principle is the same as that portrayed in the 2009 *Avatar* movie when the American military travelled to a fictional Earth-like moon called Pandora in the Alpha Centauri star system to infiltrate a society of blue people, or Na'vi, by hiding within bodies that looked like the Na'vi. Archons posing as humans have a particular hybrid information field, part human, part Archon, (the ancient 'demigods') which processes information in a way that manifests behaviour to match their psychopathic evil, lack of empathy and compassion, and stops them being influenced by the empathy, compassion and love that a fully-human information field is capable of expressing. Cult bloodlines interbreed, be they royalty or dark suits, for this reason and you have their obsession with incest. Interbreeding with full-blown humans would dilute the Archontic energy field that guarantees psychopathy in its representatives in the human realm.

Gnostic writings say the main non-human forms that Archons take are *serpentine* (what I have called for decades 'reptilian' amid unbounded ridicule from the Archontically-programmed) and what Gnostics describe as 'an unborn baby or foetus with grey skin and dark, unmoving eyes'. This is an excellent representation of the ET 'Greys' of UFO folklore which large numbers of people claim to have seen and been abducted by – Zulu shaman Credo Mutwa among them. I agree with those that believe in extraterrestrial or interdimensional visitations today and for thousands of years past. No wonder with their advanced knowledge and technological capability they were perceived and worshipped as gods for technological and other 'miracles' they appeared to perform. Imagine someone arriving in a culture disconnected from the modern world with a smartphone and computer. They would be

seen as a 'god' capable of 'miracles'. The Renegade Mind, however, wants to know the source of everything and not only the way that source manifests as human or non-human. In the same way that a Renegade Mind seeks the original source material for the 'Covid virus' to see if what is claimed is true. The original source of Archons in form is consciousness – the distorted state of consciousness known to Gnostics as Yaldabaoth.

'Revolt from God' is energetic disconnection

Where I am going next will make a lot of sense of religious texts and ancient legends relating to 'Satan', Lucifer' and the 'gods'. Gnostic descriptions sync perfectly with the themes of my own research over the years in how they describe a consciousness distortion seeking to impose itself on human consciousness. I've referred to the core of infinite awareness in previous books as Infinite Awareness in Awareness of Itself. By that I mean a level of awareness that knows that it is all awareness and is aware of all awareness. From here comes the frequency of love in its true sense and balance which is what love is on one level – the balance of all forces into a single whole called Oneness and Isness. The more we disconnect from this state of love that many call 'God' the constituent parts of that Oneness start to unravel and express themselves as a part and not a whole. They become individualised as intellect, mind, selfishness, hatred, envy, desire for power over others, and such like. This is not a problem in the greater scheme in that 'God', the *All That Is*, can experience all these possibilities through different expressions of itself including humans. What we as expressions of the whole experience the *All That Is* experiences. We are the *All That Is* experiencing itself. As we withdraw from that state of Oneness we disconnect from its influence and things can get very unpleasant and very stupid. Archontic consciousness is at the extreme end of that. It has so disconnected from the influence of Oneness that it has become an inversion of unity and love, an inversion of everything, an inversion of life itself. Evil is appropriately live written backwards. Archontic consciousness is obsessed with death, an inversion of life,

and so its manifestations in Satanism are obsessed with death. They use inverted symbols in their rituals such as the inverted pentagram and cross. Sabbatians as Archontic consciousness incarnate invert Judaism and every other religion and culture they infiltrate. They seek disunity and chaos and they fear unity and harmony as they fear love like garlic to a vampire. As a result the Cult, Archons incarnate, act with such evil, psychopathy and lack of empathy and compassion disconnected as they are from the source of love. How could Bill Gates and the rest of the Archontic psychopaths do what they have to human society in the 'Covid' era with all the death, suffering and destruction involved and have no emotional consequence for the impact on others? Now you know. Why have Zuckerberg, Brin, Page, Wojcicki and company callously censored information warning about the dangers of the 'vaccine' while thousands have been dying and having severe, sometimes life-changing reactions? Now you know. Why have Tedros, Fauci, Whitty, Vallance and their like around the world been using case and death figures they're aware are fraudulent to justify lockdowns and all the deaths and destroyed lives that have come from that? Now you know. Why did Christian Drosten produce and promote a 'testing' protocol that he knew couldn't test for infectious disease which led to a global human catastrophe. Now you know. The Archontic mind doesn't give a shit ([Fig 17](#)). I personally think that Gates and major Cult insiders are a form of AI cyborg that the Archons want humans to become.

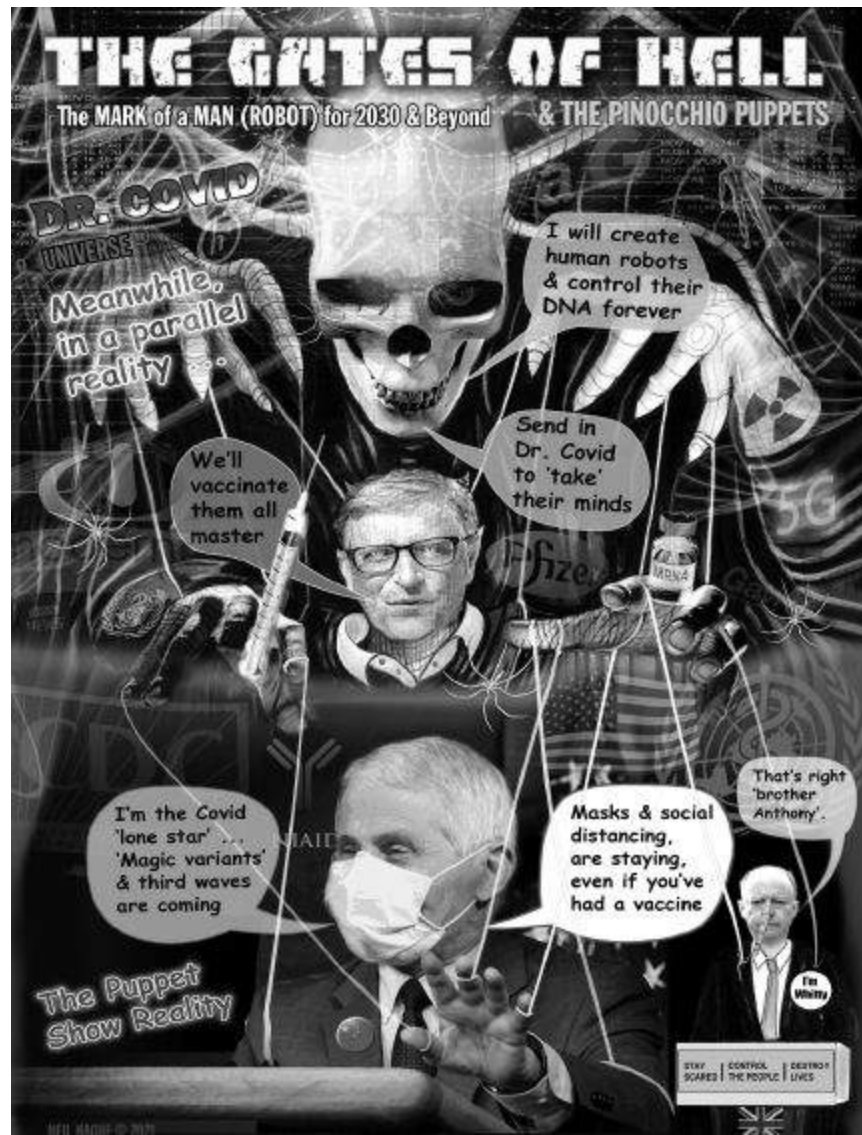


Figure 17: Artist Neil Hague's version of the 'Covid' hierarchy.

Human batteries

A state of such inversion does have its consequences, however. The level of disconnection from the Source of All means that you withdraw from that source of energetic sustenance and creativity. This means that you have to find your own supply of energetic power and it has – *us*. When the Morpheus character in the first *Matrix* movie held up a battery he spoke a profound truth when he said: 'The Matrix is a computer-generated dream world built to keep us under control in order to change the human being into one of

these.' The statement was true in all respects. We do live in a technologically-generated virtual reality simulation (more very shortly) and we have been manipulated to be an energy source for Archontic consciousness. The Disney-Pixar animated movie *Monsters, Inc.* in 2001 symbolised the dynamic when monsters in their world had no energy source and they would enter the human world to terrify children in their beds, catch the child's scream, terror (low-vibrational frequencies), and take that energy back to power the monster world. The lead character you might remember was a single giant eye and the symbolism of the Cult's all-seeing eye was obvious. Every thought and emotion is broadcast as a frequency unique to that thought and emotion. Feelings of love and joy, empathy and compassion, are high, quick, frequencies while fear, depression, anxiety, suffering and hate are low, slow, dense frequencies. Which kind do you think Archontic consciousness can connect with and absorb? In such a low and dense frequency state there's no way it can connect with the energy of love and joy. Archons can only feed off energy compatible with their own frequency and they and their Cult agents want to delete the human world of love and joy and manipulate the transmission of low vibrational frequencies through low-vibrational human mental and emotional states. *We are their energy source.* Wars are energetic banquets to the Archons – a world war even more so – and think how much low-frequency mental and emotional energy has been generated from the consequences for humanity of the 'Covid' hoax orchestrated by Archons incarnate like Gates.

The ancient practice of human sacrifice 'to the gods', continued in secret today by the Cult, is based on the same principle. 'The gods' are Archontic consciousness in different forms and the sacrifice is induced into a state of intense terror to generate the energy the Archontic frequency can absorb. Incarnate Archons in the ritual drink the blood which contains an adrenaline they crave which floods into the bloodstream when people are terrorised. Most of the sacrifices, ancient and modern, are children and the theme of 'sacrificing young virgins to the gods' is just code for children. They

have a particular pre-puberty energy that Archons want more than anything and the energy of the young in general is their target. The California Department of Education wants students to chant the names of Aztec gods (Archontic gods) once worshipped in human sacrifice rituals in a curriculum designed to encourage them to 'challenge racist, bigoted, discriminatory, imperialist/colonial beliefs', join 'social movements that struggle for social justice', and 'build new possibilities for a post-racist, post-systemic racism society'. It's the usual Woke crap that inverts racism and calls it anti-racism. In this case solidarity with 'indigenous tribes' is being used as an excuse to chant the names of 'gods' to which people were sacrificed (and still are in secret). What an example of Woke's inability to see beyond black and white, us and them, They condemn the colonisation of these tribal cultures by Europeans (quite right), but those cultures sacrificing people including children to their 'gods', and mass murdering untold numbers as the Aztecs did, is just fine. One chant is to the Aztec god Tezcatlipoca who had a man sacrificed to him in the 5th month of the Aztec calendar. His heart was cut out and he was eaten. Oh, that's okay then. Come on children ... after three ... Other sacrificial 'gods' for the young to chant their allegiance include Quetzalcoatl, Huitzilopochtli and Xipe Totec. The curriculum says that 'chants, affirmations, and energizers can be used to bring the class together, build unity around ethnic studies principles and values, and to reinvigorate the class following a lesson that may be emotionally taxing or even when student engagement may appear to be low'. Well, that's the cover story, anyway. Chanting and mantras are the repetition of a particular frequency generated from the vocal cords and chanting the names of these Archontic 'gods' tunes you into their frequency. That is the last thing you want when it allows for energetic synchronisation, attachment and perceptual influence. Initiates chant the names of their 'Gods' in their rituals for this very reason.

Vampires of the Woke

Paedophilia is another way that Archons absorb the energy of children. Paedophiles possessed by Archontic consciousness are used as the conduit during sexual abuse for discarnate Archons to vampire the energy of the young they desire so much. Stupendous numbers of children disappear every year never to be seen again although you would never know from the media. Imagine how much low-vibrational energy has been generated by children during the 'Covid' hoax when so many have become depressed and psychologically destroyed to the point of killing themselves. Shocking numbers of children are now taken by the state from loving parents to be handed to others. I can tell you from long experience of researching this since 1996 that many end up with paedophiles and assets of the Cult through corrupt and Cult-owned social services which in the reframing era has hired many psychopaths and emotionless automatons to do the job. Children are even stolen to order using spurious reasons to take them by the corrupt and secret (because they're corrupt) 'family courts'. I have written in detail in other books, starting with *The Biggest Secret* in 1997, about the ubiquitous connections between the political, corporate, government, intelligence and military elites (Cult operatives) and Satanism and paedophilia. If you go deep enough both networks have an interlocking leadership. The Woke mentality has been developed by the Cult for many reasons: To promote almost every aspect of its agenda; to hijack the traditional political left and turn it fascist; to divide and rule; and to target agenda pushbackers. But there are other reasons which relate to what I am describing here. How many happy and joyful Wokers do you ever see especially at the extreme end? They are a mental and psychological mess consumed by emotional stress and constantly emotionally cocked for the next explosion of indignation at someone referring to a female as a female. They are walking, talking, batteries as Morpheus might say emitting frequencies which both enslave them in low-vibrational bubbles of perceptual limitation and feed the Archons. Add to this the hatred claimed to be love; fascism claimed to 'anti-fascism', racism claimed to be 'anti-racism';

exclusion claimed to inclusion; and the abuse-filled Internet trolling. You have a purpose-built Archontic energy system with not a wind turbine in sight and all founded on Archontic *inversion*. We have whole generations now manipulated to serve the Archons with their actions and energy. They will be doing so their entire adult lives unless they snap out of their Archon-induced trance. Is it really a surprise that Cult billionaires and corporations put so much money their way? Where is the energy of joy and laughter, including laughing at yourself which is confirmation of your own emotional security? Mark Twain said: 'The human race has one really effective weapon, and that is laughter.' We must use it all the time. Woke has destroyed comedy because it has no humour, no joy, sense of irony, or self-deprecation. Its energy is dense and intense. *Mmmmm*, lunch says the Archontic frequency. Rudolf Steiner (1861-1925) was the Austrian philosopher and famous esoteric thinker who established Waldorf education or Steiner schools to treat children like unique expressions of consciousness and not minds to be programmed with the perceptions determined by authority. I'd been writing about this energy vampiring for decades when I was sent in 2016 a quote by Steiner. He was spot on:

There are beings in the spiritual realms for whom anxiety and fear emanating from human beings offer welcome food. When humans have no anxiety and fear, then these creatures starve. If fear and anxiety radiates from people and they break out in panic, then these creatures find welcome nutrition and they become more and more powerful. These beings are hostile towards humanity. Everything that feeds on negative feelings, on anxiety, fear and superstition, despair or doubt, are in reality hostile forces in super-sensible worlds, launching cruel attacks on human beings, while they are being fed ... These are exactly the feelings that belong to contemporary culture and materialism; because it estranges people from the spiritual world, it is especially suited to evoke hopelessness and fear of the unknown in people, thereby calling up the above mentioned hostile forces against them.

Pause for a moment from this perspective and reflect on what has happened in the world since the start of 2020. Not only will pennies drop, but billion dollar bills. We see the same theme from Don Juan Matus, a Yaqui Indian shaman in Mexico and the information source for Peruvian-born writer, Carlos Castaneda, who wrote a series of

books from the 1960s to 1990s. Don Juan described the force manipulating human society and his name for the Archons was the predator:

We have a predator that came from the depths of the cosmos and took over the rule of our lives. Human beings are its prisoners. The predator is our lord and master. It has rendered us docile, helpless. If we want to protest, it suppresses our protest. If we want to act independently, it demands that we don't do so ... indeed we are held prisoner!

They took us over because we are food to them, and they squeeze us mercilessly because we are their sustenance. Just as we rear chickens in coops, the predators rear us in human coops, humaneros. Therefore, their food is always available to them.

Different cultures, different eras, same recurring theme.

The 'ennoia' dilemma

Nag Hammadi Gnostic manuscripts say that Archon consciousness has no 'ennoia'. This is directly translated as 'intentionality', but I'll use the term 'creative imagination'. The *All That Is* in awareness of itself is the source of all creativity – all possibility – and the more disconnected you are from that source the more you are subsequently denied 'creative imagination'. Given that Archon consciousness is almost entirely disconnected it severely lacks creativity and has to rely on far more mechanical processes of thought and exploit the creative potential of those that do have 'ennoia'. You can see cases of this throughout human society. Archon consciousness almost entirely dominates the global banking system and if we study how that system works you will appreciate what I mean. Banks manifest 'money' out of nothing by issuing lines of 'credit' which is 'money' that has never, does not, and will never exist except in theory. It's a confidence trick. If you think 'credit' figures-on-a-screen 'money' is worth anything you accept it as payment. If you don't then the whole system collapses through lack of confidence in the value of that 'money'. Archontic bankers with no 'ennoia' are 'lending' 'money' that doesn't exist to humans that *do* have creativity – those that have the inspired ideas and create businesses and products. Archon banking feeds off human creativity

which it controls through 'money' creation and debt. Humans have the creativity and Archons exploit that for their own benefit and control while having none themselves. Archon Internet platforms like Facebook claim joint copyright of everything that creative users post and while Archontic minds like Zuckerberg may officially head that company it will be human creatives on the staff that provide the creative inspiration. When you have limitless 'money' you can then buy other companies established by creative humans. Witness the acquisition record of Facebook, Google and their like. Survey the Archon-controlled music industry and you see non-creative dark suit executives making their fortune from the human creativity of their artists. The cases are endless. Research the history of people like Gates and Zuckerberg and how their empires were built on exploiting the creativity of others. Archon minds cannot create out of nothing, but they are skilled (because they have to be) in what Gnostic texts call 'countermimicry'. They can imitate, but not innovate. Sabbatians trawl the creativity of others through backdoors they install in computer systems through their cybersecurity systems. Archon-controlled China is globally infamous for stealing intellectual property and I remember how Hong Kong, now part of China, became notorious for making counterfeit copies of the creativity of others – 'countermimicry'. With the now pervasive and all-seeing surveillance systems able to infiltrate any computer you can appreciate the potential for Archons to vampire the creativity of humans. Author John Lamb Lash wrote in his book about the Nag Hammadi texts, *Not In His Image*:

Although they cannot originate anything, because they lack the divine factor of ennoia (intentionality), Archons can imitate with a vengeance. Their expertise is simulation (HAL, virtual reality). The Demiurge [Yaldabaoth] fashions a heaven world copied from the fractal patterns [of the original] ... His construction is celestial kitsch, like the fake Italianate villa of a Mafia don complete with militant angels to guard every portal.

This brings us to something that I have been speaking about since the turn of the millennium. Our reality is a simulation; a virtual reality that we think is real. No, I'm not kidding.

Human reality? Well, virtually

I had pondered for years about whether our reality is 'real' or some kind of construct. I remembered being immensely affected on a visit as a small child in the late 1950s to the then newly-opened Planetarium on the Marylebone Road in London which is now closed and part of the adjacent Madame Tussauds wax museum. It was in the middle of the day, but when the lights went out there was the night sky projected in the Planetarium's domed ceiling and it appeared to be so real. The experience never left me and I didn't know why until around the turn of the millennium when I became certain that our 'night sky' and entire reality is a projection, a virtual reality, akin to the illusory world portrayed in the *Matrix* movies. I looked at the sky one day in this period and it appeared to me like the domed roof of the Planetarium. The release of the first *Matrix* movie in 1999 also provided a synchronistic and perfect visual representation of where my mind had been going for a long time. I hadn't come across the Gnostic Nag Hammadi texts then. When I did years later the correlation was once again astounding. As I read Gnostic accounts from 1,600 years and more earlier it was clear that they were describing the same simulation phenomenon. They tell how the Yaldabaoth 'Demiurge' and Archons created a 'bad copy' of original reality to rule over all that were captured by its illusions and the body was a prison to trap consciousness in the 'bad copy' fake reality. Read how Gnostics describe the 'bad copy' and update that to current times and they are referring to what we would call today a virtual reality simulation.

Author John Lamb Lash said 'the Demiurge fashions a heaven world copied from the fractal patterns' of the original through expertise in 'HAL' or virtual reality simulation. Fractal patterns are part of the energetic information construct of our reality, a sort of blueprint. If these patterns were copied in computer terms it would indeed give you a copy of a 'natural' reality in a non-natural frequency and digital form. The principle is the same as making a copy of a website. The original website still exists, but now you can change the copy version to make it whatever you like and it can

become very different to the original website. Archons have done this with our reality, a *synthetic* copy of prime reality that still exists beyond the frequency walls of the simulation. Trapped within the illusions of this synthetic Matrix, however, were and are human consciousness and other expressions of prime reality and this is why the Archons via the Cult are seeking to make the human body synthetic and give us synthetic AI minds to complete the job of turning the entire reality synthetic including what we perceive to be the natural world. To quote Kurzweil: 'Nanobots will infuse all the matter around us with information. Rocks, trees, everything will become these intelligent creatures.' Yes, *synthetic* 'creatures' just as 'Covid' and other genetically-manipulating 'vaccines' are designed to make the human body synthetic. From this perspective it is obvious why Archons and their Cult are so desperate to infuse synthetic material into every human with their 'Covid' scam.

Let there be (electromagnetic) light

Yaldabaoth, the force that created the simulation, or Matrix, makes sense of the Gnostic reference to 'The Great Architect' and its use by Cult Freemasonry as the name of its deity. The designer of the Matrix in the movies is called 'The Architect' and that trilogy is jam-packed with symbolism relating to these subjects. I have contended for years that the angry Old Testament God (Yaldabaoth) is the 'God' being symbolically 'quoted' in the opening of Genesis as 'creating the world'. This is not the creation of prime reality – it's the creation of the *simulation*. The Genesis 'God' says: 'Let there be Light: and there was light.' But what is this 'Light'? I have said for decades that the speed of light (186,000 miles per second) is not the fastest speed possible as claimed by mainstream science and is in fact the frequency walls or outer limits of the Matrix. You can't have a fastest or slowest anything within all possibility when everything is possible. The human body is encoded to operate within the speed of light or *within the simulation* and thus we see only the tiny frequency band of visible *light*. Near-death experiencers who perceive reality outside the body during temporary 'death' describe a very different

form of light and this is supported by the Nag Hammadi texts. Prime reality beyond the simulation ('Upper Aeons' to the Gnostics) is described as a realm of incredible beauty, bliss, love and harmony – a realm of 'watery light' that is so powerful 'there are no shadows'. Our false reality of Archon control, which Gnostics call the 'Lower Aeons', is depicted as a realm with a different kind of 'light' and described in terms of chaos, 'Hell', 'the Abyss' and 'Outer Darkness', where trapped souls are tormented and manipulated by demons (relate that to the 'Covid' hoax alone). The watery light theme can be found in near-death accounts and it is not the same as *simulation* 'light' which is electromagnetic or radiation light within the speed of light – the 'Lower Aeons'. Simulation 'light' is the 'luminous fire' associated by Gnostics with the Archons. The Bible refers to Yaldabaoth as 'that old serpent, called the Devil, and Satan, which deceiveth the whole world' (Revelation 12:9). I think that making a simulated copy of prime reality ('countermimicry') and changing it dramatically while all the time manipulating humanity to believe it to be real could probably meet the criteria of deceiving the whole world. Then we come to the Cult god Lucifer – the *Light Bringer*. Lucifer is symbolic of Yaldabaoth, the bringer of radiation light that forms the bad copy simulation within the speed of light. 'He' is symbolised by the lighted torch held by the Statue of Liberty and in the name 'Illuminati'. Sabbatian-Frankism declares that Lucifer is the true god and Lucifer is the real god of Freemasonry honoured as their 'Great or Grand Architect of the Universe' (simulation).

I would emphasise, too, the way Archontic technologically-generated luminous fire of radiation has deluged our environment since I was a kid in the 1950s and changed the nature of The Field with which we constantly interact. Through that interaction technological radiation is changing us. The Smart Grid is designed to operate with immense levels of communication power with 5G expanding across the world and 6G, 7G, in the process of development. Radiation is the simulation and the Archontic manipulation system. Why wouldn't the Archon Cult wish to unleash radiation upon us to an ever-greater extreme to form

Kurzweil's 'cloud'? The plan for a synthetic human is related to the need to cope with levels of radiation beyond even anything we've seen so far. Biological humans would not survive the scale of radiation they have in their script. The Smart Grid is a technological sub-reality within the technological simulation to further disconnect five-sense perception from expanded consciousness. It's a technological prison of the mind.

Infusing the 'spirit of darkness'

A recurring theme in religion and native cultures is the manipulation of human genetics by a non-human force and most famously recorded as the biblical 'sons of god' (the gods plural in the original) who interbred with the daughters of men. The Nag Hammadi *Apocryphon of John* tells the same story this way:

He [Yaldabaoth] sent his angels [Archons/demons] to the daughters of men, that they might take some of them for themselves and raise offspring for their enjoyment. And at first they did not succeed. When they had no success, they gathered together again and they made a plan together ... And the angels changed themselves in their likeness into the likeness of their mates, filling them with the spirit of darkness, which they had mixed for them, and with evil ... And they took women and begot children out of the darkness according to the likeness of their spirit.

Possession when a discarnate entity takes over a human body is an age-old theme and continues today. It's very real and I've seen it. Satanic and secret society rituals can create an energetic environment in which entities can attach to initiates and I've heard many stories of how people have changed their personality after being initiated even into lower levels of the Freemasons. I have been inside three Freemasonic temples, one at a public open day and two by just walking in when there was no one around to stop me. They were in Ryde, the town where I live, Birmingham, England, when I was with a group, and Boston, Massachusetts. They all felt the same energetically – dark, dense, low-vibrational and sinister. Demonic attachment can happen while the initiate has no idea what is going on. To them it's just a ritual to get in the Masons and do a bit of good

business. In the far more extreme rituals of Satanism human possession is even more powerful and they are designed to make possession possible. The hierarchy of the Cult is dictated by the power and perceived status of the possessing Archon. In this way the Archon hierarchy becomes the Cult hierarchy. Once the entity has attached it can influence perception and behaviour and if it attaches to the extreme then so much of its energy (information) infuses into the body information field that the hologram starts to reflect the nature of the possessing entity. This is the *Exorcist* movie type of possession when facial features change and it's known as shapeshifting. Islam's Jinn are said to be invisible tricksters who change shape, 'whisper', confuse and take human form. These are all traits of the Archons and other versions of the same phenomenon. Extreme possession could certainly infuse the 'spirit of darkness' into a partner during sex as the Nag Hammadi texts appear to describe. Such an infusion can change genetics which is also energetic information. Human genetics is information and the 'spirit of darkness' is information. Mix one with the other and change must happen. Islam has the concept of a 'Jinn baby' through possession of the mother and by Jinn taking human form. There are many ways that human genetics can be changed and remember that Archons have been aware all along of advanced techniques to do this. What is being done in human society today – and far more – was known about by Archons at the time of the 'fallen ones' and their other versions described in religions and cultures.

Archons and their human-world Cult are obsessed with genetics as we see today and they know this dictates how information is processed into perceived reality during a human life. They needed to produce a human form that would decode the simulation and this is symbolically known as 'Adam and Eve' who left the 'garden' (prime reality) and 'fell' into Matrix reality. The simulation is not a 'physical' construct (there is no 'physical'); it is a source of information. Think Wi-Fi again. The simulation is an energetic field encoded with information and body-brain systems are designed to decode that information encoded in wave or frequency form which

is transmitted to the brain as electrical signals. These are decoded by the brain to construct our sense of reality – an illusory ‘physical’ world that only exists in the brain or the mind. Virtual reality games mimic this process using the same sensory decoding system. Information is fed to the senses to decode a virtual reality that can appear so real, but isn’t (Figs 18 and 19). Some scientists believe – and I agree with them – that what we perceive as ‘physical’ reality only exists when we are looking or observing. The act of perception or focus triggers the decoding systems which turn waveform information into holographic reality. When we are not observing something our reality reverts from a holographic state to a waveform state. This relates to the same principle as a falling tree not making a noise unless someone is there to hear it or decode it. The concept makes sense from the simulation perspective. A computer is not decoding all the information in a Wi-Fi field all the time and only decodes or brings into reality on the screen that part of Wi-Fi that it’s decoding – focusing upon – at that moment.



Figure 18: Virtual reality technology ‘hacks’ into the body’s five-sense decoding system.



Figure 19: The result can be experienced as very ‘real’.

Interestingly, Professor Donald Hoffman at the Department of Cognitive Sciences at the University of California, Irvine, says that our experienced reality is like a computer interface that shows us only the level with which we interact while hiding all that exists beyond it: 'Evolution shaped us with a user interface that hides the truth. Nothing that we see is the truth – the very language of space and time and objects is the wrong language to describe reality.' He is correct in what he says on so many levels. Space and time are not a universal reality. They are a phenomenon of decoded *simulation* reality as part of the process of enslaving our sense of reality. Near-death experiencers report again and again how space and time did not exist as we perceive them once they were free of the body – body decoding systems. You can appreciate from this why Archons and their Cult are so desperate to entrap human attention in the five senses where we are in the Matrix and of the Matrix. Opening your mind to expanded states of awareness takes you beyond the information confines of the simulation and you become aware of knowledge and insights denied to you before. This is what we call 'awakening' – *awakening from the Matrix* – and in the final chapter I will relate this to current events.

Where are the 'aliens'?

A simulation would explain the so-called 'Fermi Paradox' named after Italian physicist Enrico Fermi (1901-1954) who created the first nuclear reactor. He considered the question of why there is such a lack of extraterrestrial activity when there are so many stars and planets in an apparently vast universe; but what if the night sky that we see, or think we do, is a simulated projection as I say? If you control the simulation and your aim is to hold humanity fast in essential ignorance would you want other forms of life including advanced life coming and going sharing information with humanity? Or would you want them to believe they were isolated and apparently alone? Themes of human isolation and apartness are common whether they be the perception of a lifeless universe or the fascist isolation laws of the 'Covid' era. Paradoxically the very

existence of a simulation means that we are not alone when some force had to construct it. My view is that experiences that people have reported all over the world for centuries with Reptilians and Grey entities are Archon phenomena as Nag Hammadi texts describe; and that benevolent 'alien' interactions are non-human groups that come in and out of the simulation by overcoming Archon attempts to keep them out. It should be highlighted, too, that Reptilians and Greys are obsessed with *genetics* and *technology* as related by cultural accounts and those who say they have been abducted by them. Technology is their way of overcoming some of the limitations in their creative potential and our technology-driven and controlled human society of today is *archetypical* Archon-Reptilian-Grey *modus operandi*. Technocracy is really *Archontocracy*. The Universe does not have to be as big as it appears with a simulation. There is no space or distance only information decoded into holographic reality. What we call 'space' is only the absence of holographic 'objects' and that 'space' is The Field of energetic information which connects everything into a single whole. The same applies with the artificially-generated information field of the simulation. The Universe is not big or small as a physical reality. It is decoded information, that's all, and its perceived size is decided by the way the simulation is encoded to make it appear. The entire night sky as we perceive it only exists in our brain and so where are those 'millions of light years'? The 'stars' on the ceiling of the Planetarium looked a vast distance away.

There's another point to mention about 'aliens'. I have been highlighting since the 1990s the plan to stage a fake 'alien invasion' to justify the centralisation of global power and a world military. Nazi scientist Werner von Braun, who was taken to America by Operation Paperclip after World War Two to help found NASA, told his American assistant Dr Carol Rosin about the Cult agenda when he knew he was dying in 1977. Rosin said that he told her about a sequence that would lead to total human control by a one-world government. This included threats from terrorism, rogue nations, meteors and asteroids before finally an 'alien invasion'. All of these

things, von Braun said, would be bogus and what I would refer to as a No-Problem-Reaction-Solution. Keep this in mind when 'the aliens are coming' is the new mantra. The aliens are not coming – they are *already here* and they have infiltrated human society while looking human. French-Canadian investigative journalist Serge Monast said in 1994 that he had uncovered a NASA/military operation called Project Blue Beam which fits with what Werner von Braun predicted. Monast died of a 'heart attack' in 1996 the day after he was arrested and spent a night in prison. He was 51. He said Blue Beam was a plan to stage an alien invasion that would include religious figures beamed holographically into the sky as part of a global manipulation to usher in a 'new age' of worshipping what I would say is the Cult 'god' Yaldabaoth in a one-world religion. Fake holographic asteroids are also said to be part of the plan which again syncs with von Braun. How could you stage an illusory threat from asteroids unless they were holographic inserts? This is pretty straightforward given the advanced technology outside the public arena and the fact that our 'physical' reality is holographic anyway. Information fields would be projected and we would decode them into the illusion of a 'physical' asteroid. If they can sell a global 'pandemic' with a 'virus' that doesn't exist what will humans not believe if government and media tell them?

All this is particularly relevant as I write with the Pentagon planning to release in June, 2021, information about 'UFO sightings'. I have been following the UFO story since the early 1990s and the common theme throughout has been government and military denials and cover up. More recently, however, the Pentagon has suddenly become more talkative and apparently open with Air Force pilot radar images released of unexplained craft moving and changing direction at speeds well beyond anything believed possible with human technology. Then, in March, 2021, former Director of National Intelligence John Ratcliffe said a Pentagon report months later in June would reveal a great deal of information about UFO sightings unknown to the public. He said the report would have 'massive implications'. The order to do this was included bizarrely

in a \$2.3 trillion 'coronavirus' relief and government funding bill passed by the Trump administration at the end of 2020. I would add some serious notes of caution here. I have been pointing out since the 1990s that the US military and intelligence networks have long had craft – 'flying saucers' or anti-gravity craft – which any observer would take to be extraterrestrial in origin. Keeping this knowledge from the public allows craft flown by *humans* to be perceived as alien visitations. I am not saying that 'aliens' do not exist. I would be the last one to say that, but we have to be streetwise here. President Ronald Reagan told the UN General Assembly in 1987: 'I occasionally think how quickly our differences worldwide would vanish if we were facing an alien threat from outside this world.' That's the idea. Unite against a common 'enemy' with a common purpose behind your 'saviour force' (the Cult) as this age-old technique of mass manipulation goes global.

Science moves this way ...

I could find only one other person who was discussing the simulation hypothesis publicly when I concluded it was real. This was Nick Bostrom, a Swedish-born philosopher at the University of Oxford, who has explored for many years the possibility that human reality is a computer simulation although his version and mine are not the same. Today the simulation and holographic reality hypothesis have increasingly entered the scientific mainstream. Well, the more open-minded mainstream, that is. Here are a few of the ever-gathering examples. American nuclear physicist Silas Beane led a team of physicists at the University of Bonn in Germany pursuing the question of whether we live in a simulation. They concluded that we probably do and it was likely based on a lattice of cubes. They found that cosmic rays align with that specific pattern. The team highlighted the Greisen–Zatsepin–Kuzmin (GZK) limit which refers to cosmic ray particle interaction with cosmic background radiation that creates an apparent boundary for cosmic ray particles. They say in a paper entitled 'Constraints on the Universe as a Numerical Simulation' that this 'pattern of constraint' is exactly what you

would find with a computer simulation. They also made the point that a simulation would create its own 'laws of physics' that would limit possibility. I've been making the same point for decades that the *perceived* laws of physics relate only to this reality, or what I would later call the simulation. When designers write codes to create computer and virtual reality games they are the equivalent of the laws of physics for that game. Players interact within the limitations laid out by the coding. In the same way those who wrote the codes for the simulation decided the laws of physics that would apply. These can be overridden by expanded states of consciousness, but not by those enslaved in only five-sense awareness where simulation codes rule. Overriding the codes is what people call 'miracles'. They are not. They are bypassing the encoded limits of the simulation. A population caught in simulation perception would have no idea that this was their plight. As the Bonn paper said: 'Like a prisoner in a pitch-black cell we would not be able to see the "walls" of our prison,' That's true if people remain mesmerised by the five senses. Open to expanded awareness and those walls become very clear. The main one is the speed of light.

American theoretical physicist James Gates is another who has explored the simulation question and found considerable evidence to support the idea. Gates was Professor of Physics at the University of Maryland, Director of The Center for String and Particle Theory, and on Barack Obama's Council of Advisors on Science and Technology. He and his team found *computer codes* of digital data embedded in the fabric of our reality. They relate to on-off electrical charges of 1 and 0 in the binary system used by computers. 'We have no idea what they are doing there', Gates said. They found within the energetic fabric mathematical sequences known as error-correcting codes or block codes that 'reboot' data to its original state or 'default settings' when something knocks it out of sync. Gates was asked if he had found a set of equations embedded in our reality indistinguishable from those that drive search engines and browsers and he said: 'That is correct.' Rich Terrile, director of the Centre for Evolutionary Computation and Automated Design at NASA's Jet

Propulsion Laboratory, has said publicly that he believes the Universe is a digital hologram that must have been created by a form of intelligence. I agree with that in every way. Waveform information is delivered electrically by the senses to the brain which constructs a *digital* holographic reality that we call the 'world'. This digital level of reality can be read by the esoteric art of numerology. Digital holograms are at the cutting edge of holographics today. We have digital technology everywhere designed to access and manipulate our digital level of perceived reality. Synthetic mRNA in 'Covid vaccines' has a digital component to manipulate the body's digital 'operating system'.

Reality is numbers

How many know that our reality can be broken down to numbers and codes that are the same as computer games? Max Tegmark, a physicist at the Massachusetts Institute of Technology (MIT), is the author of *Our Mathematical Universe* in which he lays out how reality can be entirely described by numbers and maths in the way that a video game is encoded with the 'physics' of computer games. Our world and computer virtual reality are essentially the same.

Tegmark imagines the perceptions of characters in an advanced computer game when the graphics are so good they don't know they are in a game. They think they can bump into real objects (electromagnetic resistance in our reality), fall in love and feel emotions like excitement. When they began to study the apparently 'physical world' of the video game they would realise that everything was made of pixels (which have been found in our energetic reality as must be the case when on one level our world is digital). What computer game characters thought was physical 'stuff', Tegmark said, could actually be broken down into numbers:

And we're exactly in this situation in our world. We look around and it doesn't seem that mathematical at all, but everything we see is made out of elementary particles like quarks and electrons. And what properties does an electron have? Does it have a smell or a colour or a texture? No! ... We physicists have come up with geeky names for [Electron] properties, like

electric charge, or spin, or lepton number, but the electron doesn't care what we call it, the properties are just numbers.

This is the illusory reality Gnostics were describing. This is the simulation. The A, C, G, and T codes of DNA have a binary value – A and C = 0 while G and T = 1. This has to be when the simulation is digital and the body must be digital to interact with it. Recurring mathematical sequences are encoded throughout reality and the body. They include the Fibonacci sequence in which the two previous numbers are added to get the next one, as in ... 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc. The sequence is encoded in the human face and body, proportions of animals, DNA, seed heads, pine cones, trees, shells, spiral galaxies, hurricanes and the number of petals in a flower. The list goes on and on. There are fractal patterns – a 'never-ending pattern that is infinitely complex and self-similar across all scales in the as above, so below, principle of holograms. These and other famous recurring geometrical and mathematical sequences such as Phi, Pi, Golden Mean, Golden Ratio and Golden Section are *computer codes* of the simulation. I had to laugh and give my head a shake the day I finished this book and it went into the production stage. I was sent an article in *Scientific American* published in April, 2021, with the headline 'Confirmed! We Live in a Simulation'. Two decades after I first said our reality is a simulation and the speed of light is its outer limit the article suggested that we do live in a simulation and that the speed of light is its outer limit. I left school at 15 and never passed a major exam in my life while the writer was up to his eyes in qualifications. As I will explain in the final chapter *knowing* is far better than thinking and they come from very different sources. The article rightly connected the speed of light to the processing speed of the 'Matrix' and said what has been in my books all this time ... 'If we are in a simulation, as it appears, then space is an abstract property written in code. It is not real'. No it's not and if we live in a simulation something created it and it wasn't *us*. 'That David Icke says we are manipulated by aliens' – he's crackers.'

Wow ...

The reality that humanity thinks is so real is an illusion. Politicians, governments, scientists, doctors, academics, law enforcement, media, school and university curriculums, on and on, are all founded on a world that *does not exist* except as a simulated prison cell. Is it such a stretch to accept that 'Covid' doesn't exist when our entire 'physical' reality doesn't exist? Revealed here is the knowledge kept under raps in the Cult networks of compartmentalised secrecy to control humanity's sense of reality by inducing the population to believe in a reality that's not real. If it wasn't so tragic in its experiential consequences the whole thing would be hysterically funny. None of this is new to Renegade Minds. Ancient Greek philosopher Plato (about 428 to about 347BC) was a major influence on Gnostic belief and he described the human plight thousands of years ago with his Allegory of the Cave. He told the symbolic story of prisoners living in a cave who had never been outside. They were chained and could only see one wall of the cave while behind them was a fire that they could not see. Figures walked past the fire casting shadows on the prisoners' wall and those moving shadows became their sense of reality. Some prisoners began to study the shadows and were considered experts on them (today's academics and scientists), but what they studied was only an illusion (today's academics and scientists). A prisoner escaped from the cave and saw reality as it really is. When he returned to report this revelation they didn't believe him, called him mad and threatened to kill him if he tried to set them free. Plato's tale is not only a brilliant analogy of the human plight and our illusory reality. It describes, too, the dynamics of the 'Covid' hoax. I have only skimmed the surface of these subjects here. The aim of this book is to crisply connect all essential dots to put what is happening today into its true context. All subject areas and their connections in this chapter are covered in great evidential detail in *Everything You Need To Know, But Have Never Been Told* and *The Answer*.

They say that bewildered people 'can't see the forest for the trees'. Humanity, however, can't see the forest for the *twigs*. The five senses

see only twigs while Renegade Minds can see the forest and it's the forest where the answers lie with the connections that reveals.

Breaking free of perceptual programming so the forest can be seen is the way we turn all this around. Not breaking free is how humanity got into this mess. The situation may seem hopeless, but I promise you it's not. We are a perceptual heartbeat from paradise if only we knew.

CHAPTER TWELVE

Escaping Wetiko

Life is simply a vacation from the infinite
Dean Cavanagh

Renegade Minds weave the web of life and events and see common themes in the apparently random. They are always there if you look for them and their pursuit is aided by incredible synchronicity that comes when your mind is open rather than mesmerised by what it thinks it can see.

Infinite awareness is infinite possibility and the more of infinite possibility that we access the more becomes infinitely possible. That may be stating the apparently obvious, but it is a devastatingly-powerful fact that can set us free. We are a point of attention within an infinity of consciousness. The question is how much of that infinity do we choose to access? How much knowledge, insight, awareness, wisdom, do we want to connect with and explore? If your focus is only in the five senses you will be influenced by a fraction of infinite awareness. I mean a range so tiny that it gives new meaning to infinitesimal. Limitation of self-identity and a sense of the possible limit accordingly your range of consciousness. We are what we think we are. Life is what we think it is. The dream is the dreamer and the dreamer is the dream. Buddhist philosophy puts it this way: 'As a thing is viewed, so it appears.' Most humans live in the realm of touch, taste, see, hear, and smell and that's the limit of their sense of the possible and sense of self. Many will follow a religion and speak of a God in his heaven, but their lives are still

dominated by the five senses in their perceptions and actions. The five senses become the arbiter of everything. When that happens all except a smear of infinity is sealed away from influence by the rigid, unyielding, reality bubbles that are the five-sense human or Phantom Self. Archon Cult methodology is to isolate consciousness within five-sense reality – the simulation – and then program that consciousness with a sense of self and the world through a deluge of life-long information designed to instil the desired perception that allows global control. Efforts to do this have increased dramatically with identity politics as identity bubbles are squeezed into the minutiae of five-sense detail which disconnect people even more profoundly from the infinite 'I'.

Five-sense focus and self-identity are like a firewall that limits access to the infinite realms. You only perceive one radio or television station and no other. We'll take that literally for a moment. Imagine a vast array of stations giving different information and angles on reality, but you only ever listen to one. Here we have the human plight in which the population is overwhelmingly confined to CultFM. This relates only to the frequency range of CultFM and limits perception and insight to that band – limits *possibility* to that band. It means you are connecting with an almost imperceptibly minuscule range of possibility and creative potential within the infinite Field. It's a world where everything seems apart from everything else and where synchronicity is rare. Synchronicity is defined in the dictionary as 'the happening by chance of two or more related or similar events at the same time'. Use of 'by chance' betrays a complete misunderstanding of reality. Synchronicity is not 'by chance'. As people open their minds, or 'awaken' to use the term, they notice more and more coincidences in their lives, bits of 'luck', apparently miraculous happenings that put them in the right place at the right time with the right people. Days become peppered with 'fancy meeting you here' and 'what are the chances of that?' My entire life has been lived like this and ever more so since my own colossal awakening in 1990 and 91 which transformed my sense of reality. Synchronicity is not 'by chance'; it is by accessing expanded

realms of possibility which allow expanded potential for manifestation. People broadcasting the same vibe from the same openness of mind tend to be drawn 'by chance' to each other through what I call frequency magnetism and it's not only people. In the last more than 30 years incredible synchronicity has also led me through the Cult maze to information in so many forms and to crucial personal experiences. These 'coincidences' have allowed me to put the puzzle pieces together across an enormous array of subjects and situations. Those who have breached the bubble of five-sense reality will know exactly what I mean and this escape from the perceptual prison cell is open to everyone whenever they make that choice. This may appear super-human when compared with the limitations of 'human', but it's really our natural state. 'Human' as currently experienced is consciousness in an unnatural state of induced separation from the infinity of the whole. I'll come to how this transformation into unity can be made when I have described in more detail the force that holds humanity in servitude by denying this access to infinite self.

The Wetiko factor

I have been talking and writing for decades about the way five-sense mind is systematically barricaded from expanded awareness. I have used the analogy of a computer (five-sense mind) and someone at the keyboard (expanded awareness). Interaction between the computer and the operator is symbolic of the interaction between five-sense mind and expanded awareness. The computer directly experiences the Internet and the operator experiences the Internet via the computer which is how it's supposed to be – the two working as one. Archons seek to control that point where the operator connects with the computer to stop that interaction ([Fig 20](#)). Now the operator is banging the keyboard and clicking the mouse, but the computer is not responding and this happens when the computer is taken over – *possessed* – by an appropriately-named computer 'virus'. The operator has lost all influence over the computer which goes its own way making decisions under the control of the 'virus'. I have

just described the dynamic through which the force known to Gnostics as Yaldabaoth and Archons disconnects five-sense mind from expanded awareness to imprison humanity in perceptual servitude.

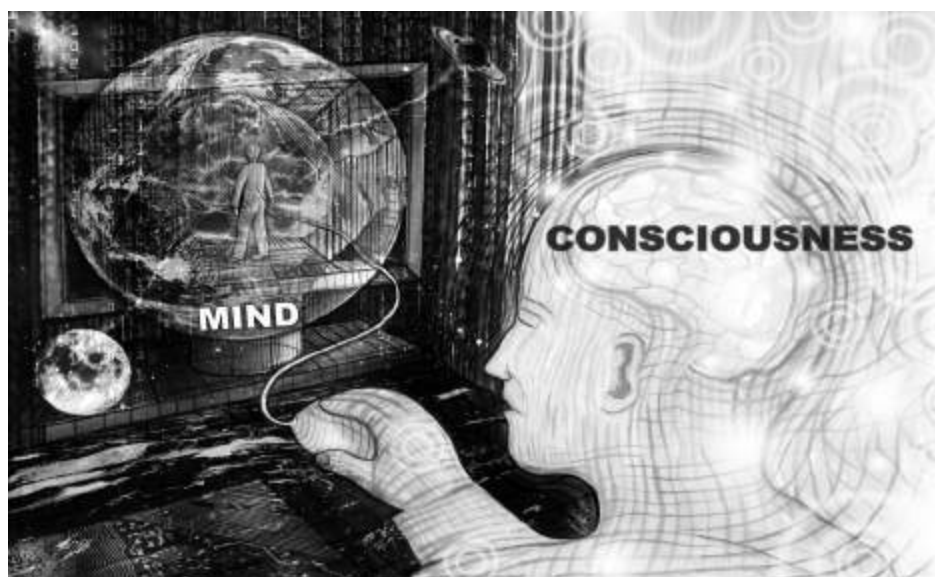


Figure 20: The mind ‘virus’ I have been writing about for decades seeks to isolate five-sense mind (the computer) from the true ‘I’. (Image by Neil Hague).

About a year ago I came across a Native American concept of Wetiko which describes precisely the same phenomenon. Wetiko is the spelling used by the Cree and there are other versions including wintiko and windigo used by other tribal groups. They spell the name with lower case, but I see Wetiko as a proper noun as with Archons and prefer a capital. I first saw an article about Wetiko by writer and researcher Paul Levy which so synced with what I had been writing about the computer/operator disconnection and later the Archons. I then read his book, the fascinating *Dispelling Wetiko, Breaking the Spell of Evil*. The parallels between what I had concluded long before and the Native American concept of Wetiko were so clear and obvious that it was almost funny. For Wetiko see the Gnostic Archons for sure and the Jinn, the Predators, and every other name for a force of evil, inversion and chaos. Wetiko is the Native American name for the force that divides the computer from

the operator (Fig 21). Indigenous author Jack D. Forbes, a founder of the Native American movement in the 1960s, wrote another book about Wetiko entitled *Columbus And Other Cannibals – The Wetiko Disease of Exploitation, Imperialism, and Terrorism* which I also read. Forbes says that Wetiko refers to an evil person or spirit ‘who terrorizes other creatures by means of terrible acts, including cannibalism’. Zulu shaman Credo Mutwa told me that African accounts tell how cannibalism was brought into the world by the Chitauri ‘gods’ – another manifestation of Wetiko. The distinction between ‘evil person or spirit’ relates to Archons/Wetiko possessing a human or acting as pure consciousness. Wetiko is said to be a sickness of the soul or spirit and a state of being that takes but gives nothing back – the Cult and its operatives perfectly described. Black Hawk, a Native American war leader defending their lands from confiscation, said European invaders had ‘poisoned hearts’ – Wetiko hearts – and that this would spread to native societies. Mention of the heart is very significant as we shall shortly see. Forbes writes: ‘Tragically, the history of the world for the past 2,000 years is, in great part, the story of the epidemiology of the wetiko disease.’ Yes, and much longer. Forbes is correct when he says: ‘The wetikos destroyed Egypt and Babylon and Athens and Rome and Tenochtitlan [capital of the Aztec empire] and perhaps now they will destroy the entire earth.’ Evil, he said, is the number one export of a Wetiko culture – see its globalisation with ‘Covid’. Constant war, mass murder, suffering of all kinds, child abuse, Satanism, torture and human sacrifice are all expressions of Wetiko and the Wetiko possessed. The world is Wetiko made manifest, *but it doesn’t have to be*. There is a way out of this even now.



Figure 21: The mind 'virus' is known to Native Americans as 'Wetiko'. (Image by Neil Hague).

Cult of Wetiko

Wetiko is the Yaldabaoth frequency distortion that seeks to attach to human consciousness and absorb it into its own. Once this connection is made Wetiko can drive the perceptions of the target which they believe to be coming from their own mind. All the horrors of history and today from mass killers to Satanists, paedophiles like Jeffrey Epstein and other psychopaths, are the embodiment of Wetiko and express its state of being in all its grotesqueness. The Cult is Wetiko incarnate, Yaldabaoth incarnate, and it seeks to facilitate Wetiko assimilation of humanity in totality into its distortion by manipulating the population into low frequency states that match its own. Paul Levy writes:

'Holographically enforced within the psyche of every human being the wetiko virus pervades and underlies the entire field of consciousness, and can therefore potentially manifest through any one of us at any moment if we are not mindful.' The 'Covid' hoax has achieved this with many people, but others have not fallen into Wetiko's frequency lair. Players in the 'Covid' human catastrophe including Gates, Schwab, Tedros, Fauci, Whitty, Vallance, Johnson, Hancock, Ferguson, Drosten, and all the rest, including the psychopath psychologists, are expressions of Wetiko. This is why

they have no compassion or empathy and no emotional consequence for what they do that would make them stop doing it. Observe all the people who support the psychopaths in authority against the Pushbackers despite the damaging impact the psychopaths have on their own lives and their family's lives. You are again looking at Wetiko possession which prevents them seeing through the lies to the obvious scam going on. *Why can't they see it?* Wetiko won't let them see it. The perceptual divide that has now become a chasm is between the Wetikoed and the non-Wetikoed.

Paul Levy describes Wetiko in the same way that I have long described the Archontic force. They are the same distorted consciousness operating across dimensions of reality: '... the subtle body of wetiko is not located in the third dimension of space and time, literally existing in another dimension ... it is able to affect ordinary lives by mysteriously interpenetrating into our three-dimensional world.' Wetiko does this through its incarnate representatives in the Cult and by weaving itself into The Field which on our level of reality is the electromagnetic information field of the simulation or Matrix. More than that, the simulation *is* Wetiko / Yaldabaoth. Caleb Scharf, Director of Astrobiology at Columbia University, has speculated that 'alien life' could be so advanced that it has transcribed itself into the quantum realm to become what we call physics. He said intelligence indistinguishable from the fabric of the Universe would solve many of its greatest mysteries:

Perhaps hyper-advanced life isn't just external. Perhaps it's already all around. It is embedded in what we perceive to be physics itself, from the root behaviour of particles and fields to the phenomena of complexity and emergence ... In other words, life might not just be in the equations. It might BE the equations [My emphasis].

Scharf said it is possible that 'we don't recognise advanced life because it forms an integral and unsuspecting part of what we've considered to be the natural world'. I agree. Wetiko/Yaldabaoth *is* the simulation. We are literally in the body of the beast. But that doesn't mean it has to control us. We all have the power to overcome Wetiko

influence and the Cult knows that. I doubt it sleeps too well because it knows that.

Which Field?

This, I suggest, is how it all works. There are two Fields. One is the fierce electromagnetic light of the Matrix within the speed of light; the other is the 'watery light' of The Field beyond the walls of the Matrix that connects with the Great Infinity. Five-sense mind and the decoding systems of the body attach us to the Field of Matrix light. They have to or we could not experience this reality. Five-sense mind sees only the Matrix Field of information while our expanded consciousness is part of the Infinity Field. When we open our minds, and most importantly our hearts, to the Infinity Field we have a mission control which gives us an expanded perspective, a road map, to understand the nature of the five-sense world. If we are isolated only in five-sense mind there is no mission control. We're on our own trying to understand a world that's constantly feeding us information to ensure we do not understand. People in this state can feel 'lost' and bewildered with no direction or radar. You can see ever more clearly those who are influenced by the Fields of Big Infinity or little five-sense mind simply by their views and behaviour with regard to the 'Covid' hoax. We have had this division throughout known human history with the mass of the people on one side and individuals who could see and intuit beyond the walls of the simulation – Plato's prisoner who broke out of the cave and saw reality for what it is. Such people have always been targeted by Wetiko/Archon-possessed authority, burned at the stake or demonised as mad, bad and dangerous. The Cult today and its global network of 'anti-hate', 'anti-fascist' Woke groups are all expressions of Wetiko attacking those exposing the conspiracy, 'Covid' lies and the 'vaccine' agenda.

Woke as a whole is Wetiko which explains its black and white mentality and how at one it is with the Wetiko-possessed Cult. Paul Levy said: 'To be in this paradigm is to still be under the thrall of a two-valued logic – where things are either true or false – of a

wetikoized mind.’ Wetiko consciousness is in a permanent rage, therefore so is Woke, and then there is Woke inversion and contradiction. ‘Anti-fascists’ act like fascists because fascists *and* ‘anti-fascists’ are both Wetiko at work. Political parties act the same while claiming to be different for the same reason. Secret society and satanic rituals are attaching initiates to Wetiko and the cold, ruthless, psychopathic mentality that secures the positions of power all over the world is Wetiko. Reframing ‘training programmes’ have the same cumulative effect of attaching Wetiko and we have their graduates described as automatons and robots with a cold, psychopathic, uncaring demeanour. They are all traits of Wetiko possession and look how many times they have been described in this book and elsewhere with regard to personnel behind ‘Covid’ including the police and medical profession. Climbing the greasy pole in any profession in a Wetiko society requires traits of Wetiko to get there and that is particularly true of politics which is not about fair competition and pre-eminence of ideas. It is founded on how many backs you can stab and arses you can lick. This culminated in the global ‘Covid’ coordination between the Wetiko possessed who pulled it off in all the different countries without a trace of empathy and compassion for their impact on humans. Our sight sense can see only holographic form and not the Field which connects holographic form. Therefore we perceive ‘physical’ objects with ‘space’ in between. In fact that ‘space’ is energy/consciousness operating on multiple frequencies. One of them is Wetiko and that connects the Cult psychopaths, those who submit to the psychopaths, and those who serve the psychopaths in the media operations of the world. Wetiko is Gates. Wetiko is the mask-wearing submissive. Wetiko is the fake journalist and ‘fact-checker’. The Wetiko Field is coordinating the whole thing. Psychopaths, gofers, media operatives, ‘anti-hate’ hate groups, ‘fact-checkers’ and submissive people work as one unit *even without human coordination* because they are attached to the *same* Field which is organising it all ([Fig 22](#)). Paul Levy is here describing how Wetiko-possessed people are drawn together and refuse to let any information breach their rigid

perceptions. He was writing long before 'Covid', but I think you will recognise followers of the 'Covid' religion *oh just a little bit*:

People who are channelling the vibratory frequency of wetiko align with each other through psychic resonance to reinforce their unspoken shared agreement so as to uphold their deranged view of reality. Once an unconscious content takes possession of certain individuals, it irresistibly draws them together by mutual attraction and knits them into groups tied together by their shared madness that can easily swell into an avalanche of insanity.

A psychic epidemic is a closed system, which is to say that it is insular and not open to any new information or informing influences from the outside world which contradict its fixed, limited, and limiting perspective.

There we have the Woke mind and the 'Covid' mind. Compatible resonance draws the awakening together, too, which is clearly happening today.

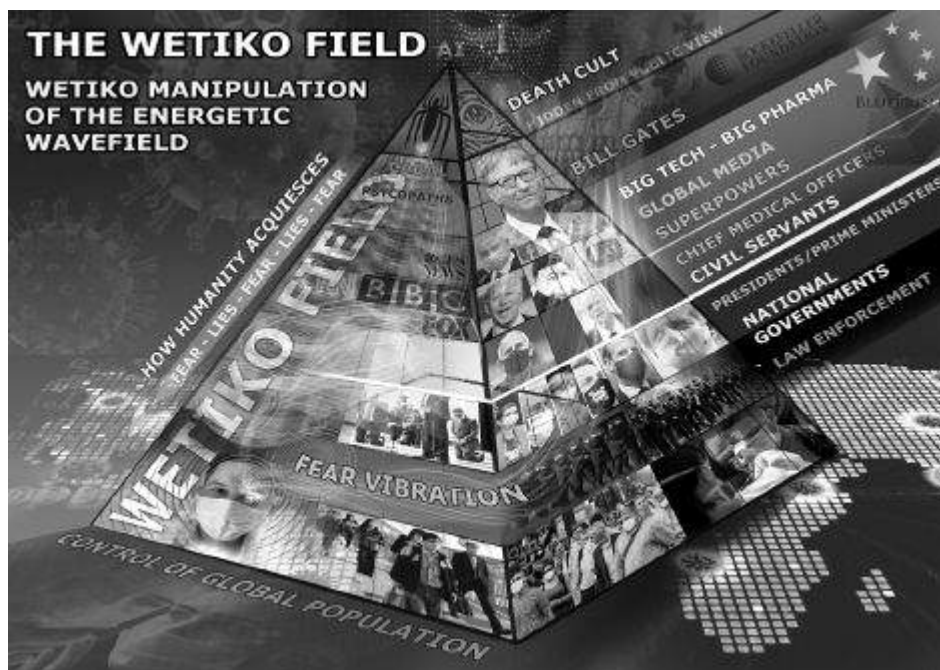


Figure 22: The Wetiko Field from which the Cult pyramid and its personnel are made manifest. (Image by Neil Hague).

Spiritual servitude

Wetiko doesn't care about humans. It's not human; it just possesses humans for its own ends and the effect (depending on the scale of

possession) can be anything from extreme psychopathy to unquestioning obedience. Wetiko's worst nightmare is for human consciousness to expand beyond the simulation. Everything is focussed on stopping that happening through control of information, thus perception, thus frequency. The 'education system', media, science, medicine, academia, are all geared to maintaining humanity in five-sense servitude as is the constant stimulation of low-vibrational mental and emotional states (see 'Covid'). Wetiko seeks to dominate those subconscious spaces between five-sense perception and expanded consciousness where the computer meets the operator. From these subconscious hiding places Wetiko speaks to us to trigger urges and desires that we take to be our own and manipulate us into anything from low-vibrational to psychopathic states. Remember how Islam describes the Jinn as invisible tricksters that 'whisper' and confuse. Wetiko is the origin of the 'trickster god' theme that you find in cultures all over the world. Jinn, like the Archons, are Wetiko which is terrified of humans awakening and reconnecting with our true self for then its energy source has gone. With that the feedback loop breaks between Wetiko and human perception that provides the energetic momentum on which its very existence depends as a force of evil. Humans are both its target and its source of survival, but only if we are operating in low-vibrational states of fear, hate, depression and the background anxiety that most people suffer. We are Wetiko's target because we are its key to survival. It needs us, not the other way round. Paul Levy writes:

A vampire has no intrinsic, independent, substantial existence in its own right; it only exists in relation to us. The pathogenic, vampiric mind-parasite called wetiko is nothing in itself – not being able to exist from its own side – yet it has a 'virtual reality' such that it can potentially destroy our species ...

...The fact that a vampire is not reflected by a mirror can also mean that what we need to see is that there's nothing, no-thing to see, other than ourselves. The fact that wetiko is the expression of something inside of us means that the cure for wetiko is with us as well. The critical issue is finding this cure within us and then putting it into effect.

Evil begets evil because if evil does not constantly expand and find new sources of energetic sustenance its evil, its *distortion*, dies with the assimilation into balance and harmony. Love is the garlic to Wetiko's vampire. Evil, the absence of love, cannot exist in the presence of love. I think I see a way out of here. I have emphasised so many times over the decades that the Archons/Wetiko and their Cult are not all powerful. *They are not*. I don't care how it looks even now *they are not*. I have not called them little boys in short trousers for effect. I have said it because it is true. Wetiko's insatiable desire for power over others is not a sign of its omnipotence, but its insecurity. Paul Levy writes: 'Due to the primal fear which ultimately drives it and which it is driven to cultivate, wetiko's body politic has an intrinsic and insistent need for centralising power and control so as to create imagined safety for itself.' *Yeeeeeees!* Exactly! Why does Wetiko want humans in an ongoing state of fear? Wetiko itself *is* fear and it is petrified of love. As evil is an absence of love, so love is an absence of fear. Love conquers all and *especially* Wetiko which *is* fear. Wetiko brought fear into the world when it wasn't here before. *Fear* was the 'fall', the fall into low-frequency ignorance and illusion – fear is **False Emotion Appearing Real**. The simulation is driven and energised by fear because Wetiko/Yaldabaoth (fear) *are* the simulation. Fear is the absence of love and Wetiko is the absence of love.

Wetiko today

We can now view current events from this level of perspective. The 'Covid' hoax has generated momentous amounts of ongoing fear, anxiety, depression and despair which have empowered Wetiko. No wonder people like Gates have been the instigators when they are Wetiko incarnate and exhibit every trait of Wetiko in the extreme. See how cold and unemotional these people are like Gates and his cronies, how dead of eye they are. That's Wetiko. Sabbatians are Wetiko and everything they control including the World Health Organization, Big Pharma and the 'vaccine' makers, national 'health'

hierarchies, corporate media, Silicon Valley, the banking system, and the United Nations with its planned transformation into world government. All are controlled and possessed by the Wetiko distortion into distorting human society in its image. We are with this knowledge at the gateway to understanding the world. Divisions of race, culture, creed and sexuality are diversions to hide the real division between those possessed and influenced by Wetiko and those that are not. The 'Covid' hoax has brought both clearly into view. Human behaviour is not about race. Tyrants and dictatorships come in all colours and creeds. What unites the US president bombing the innocent and an African tribe committing genocide against another as in Rwanda? What unites them? *Wetiko*. All wars are Wetiko, all genocide is Wetiko, all hunger over centuries in a world of plenty is Wetiko. Children going to bed hungry, including in the West, is Wetiko. Cult-generated Woke racial divisions that focus on the body are designed to obscure the reality that divisions in behaviour are manifestations of mind, not body. Obsession with body identity and group judgement is a means to divert attention from the real source of behaviour – mind and perception. Conflict sown by the Woke both within themselves and with their target groups are Wetiko providing lunch for itself through still more agents of the division, chaos, and fear on which it feeds. The Cult is seeking to assimilate the entirety of humanity and all children and young people into the Wetiko frequency by manipulating them into states of fear and despair. Witness all the suicide and psychological unravelling since the spring of 2020. Wetiko psychopaths want to impose a state of unquestioning obedience to authority which is no more than a conduit for Wetiko to enforce its will and assimilate humanity into itself. It needs us to believe that resistance is futile when it fears resistance and even more so the game-changing non-cooperation with its impositions. It can use violent resistance for its benefit. Violent impositions and violent resistance are *both* Wetiko. The Power of Love with its Power of No will sweep Wetiko from our world. Wetiko and its Cult know that. They just don't want us to know.

AI Wetiko

This brings me to AI or artificial intelligence and something else Wetikos don't want us to know. What is AI *really*? I know about computer code algorithms and AI that learns from data input. These, however, are more diversions, the expeditionary force, for the real AI that they want to connect to the human brain as promoted by Silicon Valley Wetikos like Kurzweil. What is this AI? It is the frequency of *Wetiko*, the frequency of the Archons. The connection of AI to the human brain is the connection of the Wetiko frequency to create a Wetiko hive mind and complete the job of assimilation. The hive mind is planned to be controlled from Israel and China which are both 100 percent owned by Wetiko Sabbatians. The assimilation process has been going on minute by minute in the 'smart' era which fused with the 'Covid' era. We are told that social media is scrambling the minds of the young and changing their personality. This is true, but what is social media? Look more deeply at how it works, how it creates divisions and conflict, the hostility and cruelty, the targeting of people until they are destroyed. That's Wetiko. Social media is manipulated to tune people to the Wetiko frequency with all the emotional exploitation tricks employed by platforms like Facebook and its Wetiko front man, Zuckerberg. Facebook's Instagram announced a new platform for children to overcome a legal bar on them using the main site. This is more Wetiko exploitation and manipulation of kids. Amnesty International likened the plan to foxes offering to guard the henhouse and said it was incompatible with human rights. Since when did Wetiko or Zuckerberg (I repeat myself) care about that? Would Brin and Page at Google, Wojcicki at YouTube, Bezos at Amazon and whoever the hell runs Twitter act as they do if they were not channelling Wetiko? Would those who are developing technologies for no other reason than human control? How about those designing and selling technologies to kill people and Big Pharma drug and 'vaccine' producers who know they will end or devastate lives? Quite a thought for these people to consider is that if you are Wetiko in a human life you are Wetiko on the 'other side' unless your frequency

changes and that can only change by a change of perception which becomes a change of behaviour. Where Gates is going does not bear thinking about although perhaps that's exactly where he wants to go. Either way, that's where he's going. His frequency will make it so.

The frequency lair

I have been saying for a long time that a big part of the addiction to smartphones and devices is that a frequency is coming off them that entraps the mind. People spend ages on their phones and sometimes even a minute or so after they put them down they pick them up again and it all repeats. 'Covid' lockdowns will have increased this addiction a million times for obvious reasons. Addictions to alcohol overindulgence and drugs are another way that Wetiko entraps consciousness to attach to its own. Both are symptoms of low-vibrational psychological distress which alcoholism and drug addiction further compound. Do we think it's really a coincidence that access to them is made so easy while potions that can take people into realms beyond the simulation are banned and illegal? I have explored smartphone addiction in other books, the scale is mind-blowing, and that level of addiction does not come without help. Tech companies that make these phones are Wetiko and they will have no qualms about destroying the minds of children. We are seeing again with these companies the Wetiko perceptual combination of psychopathic enforcers and weak and meek unquestioning compliance by the rank and file.

The global Smart Grid is the Wetiko Grid and it is crucial to complete the Cult endgame. The simulation is radiation and we are being deluged with technological radiation on a devastating scale. Wetiko frauds like Elon Musk serve Cult interests while occasionally criticising them to maintain his street-cred. 5G and other forms of Wi-Fi are being directed at the earth from space on a volume and scale that goes on increasing by the day. Elon Musk's (officially) SpaceX Starlink project is in the process of putting tens of thousands of satellites in low orbit to cover every inch of the planet with 5G and other Wi-Fi to create Kurzweil's global 'cloud' to which the

human mind is planned to be attached very soon. SpaceX has approval to operate 12,000 satellites with more than 1,300 launched at the time of writing and applications filed for 30,000 more. Other operators in the Wi-Fi, 5G, low-orbit satellite market include OneWeb (UK), Telesat (Canada), and AST & Science (US). Musk tells us that AI could be the end of humanity and then launches a company called Neuralink to connect the human brain to computers. Musk's (in theory) Tesla company is building electric cars and the driverless vehicles of the smart control grid. As frauds and bullshitters go Elon Musk in my opinion is Major League.

5G and technological radiation in general are destructive to human health, genetics and psychology and increasing the strength of artificial radiation underpins the five-sense perceptual bubbles which are themselves expressions of radiation or electromagnetism. Freedom activist John Whitehead was so right with his 'databit by databit, we are building our own electronic concentration camps'. The Smart Grid and 5G is a means to control the human mind and infuse perceptual information into The Field to influence anyone in sync with its frequency. You can change perception and behaviour en masse if you can manipulate the population into those levels of frequency and this is happening all around us today. The arrogance of Musk and his fellow Cult operatives knows no bounds in the way that we see with Gates. Musk's satellites are so many in number already they are changing the night sky when viewed from Earth. The astronomy community has complained about this and they have seen nothing yet. Some consequences of Musk's Wetiko hubris include: Radiation; visible pollution of the night sky; interference with astronomy and meteorology; ground and water pollution from intensive use of increasingly many spaceports; accumulating space debris; continual deorbiting and burning up of aging satellites, polluting the atmosphere with toxic dust and smoke; and ever-increasing likelihood of collisions. A collective public open letter of complaint to Musk said:

We are writing to you ... because SpaceX is in process of surrounding the Earth with a network of thousands of satellites whose very purpose is to irradiate every square inch of the

Earth. SpaceX, like everyone else, is treating the radiation as if it were not there. As if the mitochondria in our cells do not depend on electrons moving undisturbed from the food we digest to the oxygen we breathe.

As if our nervous systems and our hearts are not subject to radio frequency interference like any piece of electronic equipment. As if the cancer, diabetes, and heart disease that now afflict a majority of the Earth's population are not metabolic diseases that result from interference with our cellular machinery. As if insects everywhere, and the birds and animals that eat them, are not starving to death as a result.

People like Musk and Gates believe in their limitless Wetiko arrogance that they can do whatever they like to the world because they own it. Consequences for humanity are irrelevant. It's absolutely time that we stopped taking this shit from these self-styled masters of the Earth when you consider where this is going.

Why is the Cult so anti-human?

I hear this question often: Why would they do this when it will affect them, too? Ah, but will it? Who is this *them*? Forget their bodies. They are just vehicles for Wetiko consciousness. When you break it all down to the foundations we are looking at a state of severely distorted consciousness targeting another state of consciousness for assimilation. The rest is detail. The simulation is the fly-trap in which unique sensations of the five senses create a cycle of addiction called reincarnation. Renegade Minds see that everything which happens in our reality is a smaller version of the whole picture in line with the holographic principle. Addiction to the radiation of smart technology is a smaller version of addiction to the whole simulation. Connecting the body/brain to AI is taking that addiction on a giant step further to total ongoing control by assimilating human incarnate consciousness into Wetiko. I have watched during the 'Covid' hoax how many are becoming ever more profoundly attached to Wetiko's perceptual calling cards of aggressive response to any other point of view ('There is no other god but me'), psychopathic lack of compassion and empathy, and servile submission to the narrative and will of authority. Wetiko is the psychopaths *and* subservience to psychopaths. The Cult of Wetiko is

so anti-human because it is *not* human. It embarked on a mission to destroy human by targeting everything that it means to be human and to survive as human. 'Covid' is not the end, just a means to an end. The Cult with its Wetiko consciousness is seeking to change Earth systems, including the atmosphere, to suit them, not humans. The gathering bombardment of 5G alone from ground and space is dramatically changing The Field with which the five senses interact. There is so much more to come if we sit on our hands and hope it will all go away. It is not meant to go away. It is meant to get ever more extreme and we need to face that while we still can – just.

Carbon dioxide is the gas of life. Without that human is over. Kaput, gone, history. No natural world, no human. The Cult has created a cock and bull story about carbon dioxide and climate change to justify its reduction to the point where Gates and the ignoramus Biden 'climate chief' John Kerry want to suck it out of the atmosphere. Kerry wants to do this because his master Gates does. Wetikos have made the gas of life a demon with the usual support from the Wokers of Extinction Rebellion and similar organisations and the bewildered puppet-child that is Greta Thunberg who was put on the world stage by Klaus Schwab and the World Economic Forum. The name Extinction Rebellion is both ironic and as always Wetiko inversion. The gas that we need to survive must be reduced to save us from extinction. The most basic need of human is oxygen and we now have billions walking around in face nappies depriving body and brain of this essential requirement of human existence. More than that 5G at 60 gigahertz interacts with the oxygen molecule to reduce the amount of oxygen the body can absorb into the bloodstream. The obvious knock-on consequences of that for respiratory and cognitive problems and life itself need no further explanation. Psychopaths like Musk are assembling a global system of satellites to deluge the human atmosphere with this insanity. The man should be in jail. Here we have two most basic of human needs, oxygen and carbon dioxide, being dismantled.

Two others, water and food, are getting similar treatment with the United Nations Agendas 21 and 2030 – the Great Reset – planning to

centrally control all water and food supplies. People will not even own rain water that falls on their land. Food is affected at the most basic level by reducing carbon dioxide. We have genetic modification or GMO infiltrating the food chain on a mass scale, pesticides and herbicides polluting the air and destroying the soil. Freshwater fish that provide livelihoods for 60 million people and feed hundreds of millions worldwide are being 'pushed to the brink' according the conservationists while climate change is the only focus. Now we have Gates and Schwab wanting to dispense with current food sources all together and replace them with a synthetic version which the Wetiko Cult would control in terms of production and who eats and who doesn't. We have been on the Totalitarian Tiptoe to this for more than 60 years as food has become ever more processed and full of chemical shite to the point today when it's not natural food at all. As Dr Tom Cowan says: 'If it has a label don't eat it.' Bill Gates is now the biggest owner of farmland in the United States and he does nothing without an ulterior motive involving the Cult. Klaus Schwab wrote: 'To feed the world in the next 50 years we will need to produce as much food as was produced in the last 10,000 years ... food security will only be achieved, however, if regulations on genetically modified foods are adapted to reflect the reality that gene editing offers a precise, efficient and safe method of improving crops.' Liar. People and the world are being targeted with aluminium through vaccines, chemtrails, food, drink cans, and endless other sources when aluminium has been linked to many health issues including dementia which is increasing year after year. Insects, bees and wildlife essential to the food chain are being deleted by pesticides, herbicides and radiation which 5G is dramatically increasing with 6G and 7G to come. The pollinating bee population is being devastated while wildlife including birds, dolphins and whales are having their natural radar blocked by the effects of ever-increasing radiation. In the summer windscreens used to be splattered with insects so numerous were they. It doesn't happen now. Where have they gone?

Synthetic everything

The Cult is introducing genetically-modified versions of trees, plants and insects including a Gates-funded project to unleash hundreds of millions of genetically-modified, lab-altered and patented male mosquitoes to mate with wild mosquitoes and induce genetic flaws that cause them to die out. Clinically-insane Gates-funded Japanese researchers have developed mosquitos that spread vaccine and are dubbed 'flying vaccinators'. Gates is funding the modification of weather patterns in part to sell the myth that this is caused by carbon dioxide and he's funding geoengineering of the skies to change the atmosphere. Some of this came to light with the Gates-backed plan to release tonnes of chalk into the atmosphere to 'deflect the Sun and cool the planet'. Funny how they do this while the heating effect of the Sun is not factored into climate projections focussed on carbon dioxide. The reason is that they want to reduce carbon dioxide (so don't mention the Sun), but at the same time they do want to reduce the impact of the Sun which is so essential to human life and health. I have mentioned the sun-cholesterol-vitamin D connection as they demonise the Sun with warnings about skin cancer (caused by the chemicals in sun cream they tell you to splash on). They come from the other end of the process with statin drugs to reduce cholesterol that turns sunlight into vitamin D. A lack of vitamin D leads to a long list of health effects and how vitamin D levels must have fallen with people confined to their homes over 'Covid'. Gates is funding other forms of geoengineering and most importantly chemtrails which are dropping heavy metals, aluminium and self-replicating nanotechnology onto the Earth which is killing the natural world. See *Everything You Need To Know, But Have Never Been Told* for the detailed background to this.

Every human system is being targeted for deletion by a force that's not human. The Wetiko Cult has embarked on the process of transforming the human body from biological to synthetic biological as I have explained. Biological is being replaced by the artificial and synthetic – Archontic 'countermimicry' – right across human society. The plan eventually is to dispense with the human body altogether

and absorb human consciousness – which it wouldn't really be by then – into cyberspace (the simulation which is Wetiko/Yaldabaoth). Preparations for that are already happening if people would care to look. The alternative media rightly warns about globalism and 'the globalists', but this is far bigger than that and represents the end of the human race as we know it. The 'bad copy' of prime reality that Gnostics describe was a bad copy of harmony, wonder and beauty to start with before Wetiko/Yaldabaoth set out to change the simulated 'copy' into something very different. The process was slow to start with. Entrapped humans in the simulation timeline were not technologically aware and they had to be brought up to intellectual speed while being suppressed spiritually to the point where they could build their own prison while having no idea they were doing so. We have now reached that stage where technological intellect has the potential to destroy us and that's why events are moving so fast. Central American shaman Don Juan Matus said:

Think for a moment, and tell me how you would explain the contradictions between the intelligence of man the engineer and the stupidity of his systems of belief, or the stupidity of his contradictory behaviour. Sorcerers believe that the predators have given us our systems of beliefs, our ideas of good and evil; our social mores. They are the ones who set up our dreams of success or failure. They have given us covetousness, greed, and cowardice. It is the predator who makes us complacent, routinary, and egomaniacal.

In order to keep us obedient and meek and weak, the predators engaged themselves in a stupendous manoeuvre – stupendous, of course, from the point of view of a fighting strategist; a horrendous manoeuvre from the point of those who suffer it. They gave us their mind. The predators' mind is baroque, contradictory, morose, filled with the fear of being discovered any minute now.

For 'predators' see Wetiko, Archons, Yaldabaoth, Jinn, and all the other versions of the same phenomenon in cultures and religions all over the world. The theme is always the same because it's true and it's real. We have reached the point where we have to deal with it. The question is – how?

Don't fight – walk away

I thought I'd use a controversial subheading to get things moving in terms of our response to global fascism. What do you mean 'don't fight'? What do you mean 'walk away'? We've got to fight. We can't walk away. Well, it depends what we mean by fight and walk away. If fighting means physical combat we are playing Wetiko's game and falling for its trap. It wants us to get angry, aggressive, and direct hate and hostility at the enemy we think we must fight. Every war, every battle, every conflict, has been fought with Wetiko leading both sides. It's what it does. Wetiko wants a fight, anywhere, any place. Just hit me, son, so I can hit you back. Wetiko hits Wetiko and Wetiko hits Wetiko in return. I am very forthright as you can see in exposing Wetikos of the Cult, but I don't hate them. I refuse to hate them. It's what they want. What you hate you become. What you *fight* you become. Wokers, 'anti-haters' and 'anti-fascists' prove this every time they reach for their keyboards or don their balaclavas. By walk away I mean to disengage from Wetiko which includes ceasing to cooperate with its tyranny. Paul Levy says of Wetiko:

The way to 'defeat' evil is not to try to destroy it (for then, in playing evil's game, we have already lost), but rather, to find the invulnerable place within ourselves where evil is unable to vanquish us – this is to truly 'win' our battle with evil.

Wetiko is everywhere in human society and it's been on steroids since the 'Covid' hoax. Every shouting match over wearing masks has Wetiko wearing a mask and Wetiko not wearing one. It's an electrical circuit of push and resist, push and resist, with Wetiko pushing *and* resisting. Each polarity is Wetiko empowering itself. Dictionary definitions of 'resist' include 'opposing, refusing to accept or comply with' and the word to focus on is 'opposing'. What form does this take – setting police cars alight or 'refusing to accept or comply with'? The former is Wetiko opposing Wetiko while the other points the way forward. This is the difference between those aggressively demanding that government fascism must be obeyed who stand in stark contrast to the great majority of Pushbackers. We saw this clearly with a march by thousands of Pushbackers against lockdown in London followed days later by a Woker-hijacked

protest in Bristol in which police cars were set on fire. Masks were virtually absent in London and widespread in Bristol. Wetiko wants lockdown on every level of society and infuses its aggression to police it through its unknowing stooges. Lockdown protesters are the ones with the smiling faces and the hugs, The two blatantly obvious states of being – getting more obvious by the day – are the result of Wokers and their like becoming ever more influenced by the simulation Field of Wetiko and Pushbackers ever more influenced by The Field of a far higher vibration beyond the simulation. Wetiko can't invade the heart which is where most lockdown opponents are coming from. It's the heart that allows them to see through the lies to the truth in ways I will be highlighting.

Renegade Minds know that calmness is the place from which wisdom comes. You won't find wisdom in a hissing fit and wisdom is what we need in abundance right now. Calmness is not weakness – you don't have to scream at the top of your voice to be strong. Calmness is indeed a sign of strength. 'No' means I'm not doing it. NOOOO!!! doesn't mean you're not doing it even more. Volume does not advance 'No – I'm not doing it'. You are just not doing it. Wetiko possessed and influenced don't know how to deal with that. Wetiko wants a fight and we should not give it one. What it needs more than anything is our *cooperation* and we should not give that either. Mass rallies and marches are great in that they are a visual representation of feeling, but if it ends there they are irrelevant. You demand that Wetikos act differently? Well, they're not going to are they? They are Wetikos. We don't need to waste our time demanding that something doesn't happen when that will make no difference. We need to delete the means that *allows* it to happen. This, invariably, is our cooperation. You can demand a child stop firing a peashooter at the dog or you can refuse to buy the peashooter. If you provide the means you are cooperating with the dog being smacked on the nose with a pea. How can the authorities enforce mask-wearing if millions in a country refuse? What if the 74 million Pushbackers that voted for Trump in 2020 refused to wear masks, close their businesses or stay in their homes. It would be unenforceable. The

few control the many through the compliance of the many and that's always been the dynamic be it 'Covid' regulations or the Roman Empire. I know people can find it intimidating to say no to authority or stand out in a crowd for being the only one with a face on display; but it has to be done or it's over. I hope I've made clear in this book that where this is going will be far more intimidating than standing up now and saying 'No' – I will not cooperate with my own enslavement and that of my children. There might be consequences for some initially, although not so if enough do the same. The question that must be addressed is what is going to happen if we don't? It is time to be strong and unyieldingly so. No means no. Not here and there, but *everywhere* and *always*. I have refused to wear a mask and obey all the other nonsense. I will not comply with tyranny. I repeat: Fascism is not imposed by fascists – there are never enough of them. Fascism is imposed by the population acquiescing to fascism. *I will not do it*. I will die first, or my body will. Living meekly under fascism is a form of death anyway, the death of the spirit that Martin Luther King described.

Making things happen

We must not despair. This is not over till it's over and it's far from that. The 'fat lady' must refuse to sing. The longer the 'Covid' hoax has dragged on and impacted on more lives we have seen an awakening of phenomenal numbers of people worldwide to the realisation that what they have believed all their lives is not how the world really is. Research published by the system-serving University of Bristol and King's College London in February, 2021, concluded: 'One in every 11 people in Britain say they trust David Icke's take on the coronavirus pandemic.' It will be more by now and we have gathering numbers to build on. We must urgently progress from seeing the scam to ceasing to cooperate with it. Prominent German lawyer Reiner Fuellmich, also licenced to practice law in America, is doing a magnificent job taking the legal route to bring the psychopaths to justice through a second Nuremberg tribunal for crimes against humanity. Fuellmich has an impressive record of

beating the elite in court and he formed the German Corona Investigative Committee to pursue civil charges against the main perpetrators with a view to triggering criminal charges. Most importantly he has grasped the foundation of the hoax – the PCR test not testing for the ‘virus’ – and Christian Drosten is therefore on his charge sheet along with Gates frontman Tedros at the World Health Organization. Major players must not be allowed to inflict their horrors on the human race without being brought to book. A life sentence must follow for Bill Gates and the rest of them. A group of researchers has also indicted the government of Norway for crimes against humanity with copies sent to the police and the International Criminal Court. The lawsuit cites participation in an internationally-planned false pandemic and violation of international law and human rights, the European Commission’s definition of human rights by coercive rules, Nuremberg and Hague rules on fundamental human rights, and the Norwegian constitution. We must take the initiative from hereon and not just complain, protest and react.

There are practical ways to support vital mass non-cooperation. Organising in numbers is one. Lockdown marches in London in the spring in 2021 were mass non-cooperation that the authorities could not stop. There were too many people. Hundreds of thousands walked the London streets in the centre of the road for mile after mile while the Face-Nappies could only look on. They were determined, but calm, and just *did it* with no histrionics and lots of smiles. The police were impotent. Others are organising group shopping without masks for mutual support and imagine if that was happening all over. Policing it would be impossible. If the store refuses to serve people in these circumstances they would be faced with a long line of trolleys full of goods standing on their own and everything would have to be returned to the shelves. How would they cope with that if it kept happening? I am talking here about moving on from complaining to being pro-active; from watching things happen to making things happen. I include in this our relationship with the police. The behaviour of many Face-Nappies

has been disgraceful and anyone who thinks they would never find concentration camp guards in the 'enlightened' modern era have had that myth busted big-time. The period and setting may change – Wetikos never do. I watched film footage from a London march in which a police thug viciously kicked a protestor on the floor who had done nothing. His fellow Face-Nappies stood in a ring protecting him. What he did was a criminal assault and with a crowd far outnumbering the police this can no longer be allowed to happen unchallenged. I get it when people chant 'shame on you' in these circumstances, but that is no longer enough. They *have* no shame those who do this. Crowds needs to start making a citizen's arrest of the police who commit criminal offences and brutally attack innocent people and defenceless women. A citizen's arrest can be made under section 24A of the UK Police and Criminal Evidence (PACE) Act of 1984 and you will find something similar in other countries. I prefer to call it a Common Law arrest rather than citizen's for reasons I will come to shortly. Anyone can arrest a person committing an indictable offence or if they have reasonable grounds to suspect they are committing an indictable offence. On both counts the attack by the police thug would have fallen into this category. A citizen's arrest can be made to stop someone:

- Causing physical injury to himself or any other person
- Suffering physical injury
- Causing loss of or damage to property
- Making off before a constable can assume responsibility for him

A citizen's arrest may also be made to prevent a breach of the peace under Common Law and if they believe a breach of the peace will happen or anything related to harm likely to be done or already done in their presence. This is the way to go I think – the Common Law version. If police know that the crowd and members of the public will no longer be standing and watching while they commit

their thuggery and crimes they will think twice about acting like Brownshirts and Blackshirts.

Common Law – common sense

Mention of Common Law is very important. Most people think the law is the law as in one law. This is not the case. There are two bodies of law, Common Law and Statute Law, and they are not the same. Common Law is founded on the simple premise of do no harm. It does not recognise victimless crimes in which no harm is done while Statute Law does. There is a Statute Law against almost everything. So what is Statute Law? Amazingly it's the law of the *sea* that was brought ashore by the Cult to override the law of the land which is Common Law. They had no right to do this and as always they did it anyway. They had to. They could not impose their will on the people through Common Law which only applies to do no harm. How could you stitch up the fine detail of people's lives with that? Instead they took the law of the sea, or Admiralty Law, and applied it to the population. Statute Law refers to all the laws spewing out of governments and their agencies including all the fascist laws and regulations relating to 'Covid'. The key point to make is that Statute Law is *contract law*. It only applies between *contracting* corporations. Most police officers don't even know this. They have to be kept in the dark, too. Long ago when merchants and their sailing ships began to trade with different countries a contractual law was developed called Admiralty Law and other names. Again it only applied to *contracts* agreed between *corporate* entities. If there is no agreed contract the law of the sea had no jurisdiction *and that still applies to its new alias of Statute Law*. The problem for the Cult when the law of the sea was brought ashore was an obvious one. People were not corporations and neither were government entities. To overcome the latter they made governments and all associated organisations corporations. All the institutions are *private corporations* and I mean governments and their agencies, local councils, police, courts, military, US states, the whole lot. Go to the

Dun and Bradstreet corporate listings website for confirmation that they are all corporations. You are arrested by a private corporation called the police by someone who is really a private security guard and they take you to court which is another private corporation. Neither have jurisdiction over you unless you consent and *contract* with them. This is why you hear the mantra about law enforcement policing by *consent* of the people. In truth the people 'consent' only in theory through monumental trickery.

Okay, the Cult overcame the corporate law problem by making governments and institutions corporate entities; but what about people? They are not corporations are they? Ah ... well in a sense, and *only* a sense, they are. Not people exactly – the illusion of people. The Cult creates a corporation in the name of everyone at the time that their birth certificate is issued. Note birth/ *berth* certificate and when you go to court under the law of the sea on land you stand in a *dock*. These are throwbacks to the origin. My Common Law name is David Vaughan Icke. The name of the corporation created by the government when I was born is called Mr David Vaughan Icke usually written in capitals as MR DAVID VAUGHAN ICKE. That is not me, the living, breathing man. It is a fictitious corporate entity. The trick is to make you think that David Vaughan Icke and MR DAVID VAUGHAN ICKE are the same thing. *They are not*. When police charge you and take you to court they are prosecuting the corporate entity and not the living, breathing, man or woman. They have to trick you into identifying as the corporate entity and contracting with them. Otherwise they have no jurisdiction. They do this through a language known as legalese. Lawful and legal are not the same either. Lawful relates to Common Law and legal relates to Statute Law. Legalese is the language of Statue Law which uses terms that mean one thing to the public and another in legalese. Notice that when a police officer tells someone why they are being charged he or she will say at the end: 'Do you understand?' To the public that means 'Do you comprehend?' In legalese it means 'Do you stand under me?' Do you stand under my authority? If you say

yes to the question you are unknowingly agreeing to give them jurisdiction over you in a contract between two corporate entities.

This is a confidence trick in every way. Contracts have to be agreed between informed parties and if you don't know that David Vaughan Icke is agreeing to be the corporation MR DAVID VAUGHAN ICKE you cannot knowingly agree to contract. They are deceiving you and another way they do this is to ask for proof of identity. You usually show them a driving licence or other document on which your corporate name is written. In doing so you are accepting that you are that corporate entity when you are not. Referring to yourself as a 'person' or 'citizen' is also identifying with your corporate fiction which is why I made the Common Law point about the citizen's arrest. If you are approached by a police officer you identify yourself immediately as a living, breathing, man or woman and say 'I do not consent, I do not contract with you and I do not understand' or stand under their authority. I have a Common Law birth certificate as a living man and these are available at no charge from commonlawcourt.com. Businesses registered under the Statute Law system means that its laws apply. There are, however, ways to run a business under Common Law. Remember all 'Covid' laws and regulations are Statute Law – the law of *contracts* and you do not have to contract. This doesn't mean that you can kill someone and get away with it. Common Law says do no harm and that applies to physical harm, financial harm etc. Police are employees of private corporations and there needs to be a new system of non-corporate Common Law constables operating outside the Statute Law system. If you go to davidicke.com and put Common Law into the search engine you will find videos that explain Common Law in much greater detail. It is definitely a road we should walk.

With all my heart

I have heard people say that we are in a spiritual war. I don't like the term 'war' with its Wetiko dynamic, but I know what they mean. Sweep aside all the bodily forms and we are in a situation in which two states of consciousness are seeking very different realities.

Wetiko wants upheaval, chaos, fear, suffering, conflict and control. The other wants love, peace, harmony, fairness and freedom. That's where we are. We should not fall for the idea that Wetiko is all-powerful and there's nothing we can do. Wetiko is not all-powerful. It's a joke, pathetic. It doesn't have to be, but it has made that choice for now. A handful of times over the years when I have felt the presence of its frequency I have allowed it to attach briefly so I could consciously observe its nature. The experience is not pleasant, the energy is heavy and dark, but the ease with which you can kick it back out the door shows that its real power is in persuading us that it has power. It's all a con. Wetiko is a con. It's a trickster and not a power that can control us if we unleash our own. The con is founded on manipulating humanity to give its power to Wetiko which recycles it back to present the illusion that it has power when its power is *ours* that we gave away. This happens on an energetic level and plays out in the world of the seen as humanity giving its power to Wetiko authority which uses that power to control the population when the power is only the power the population has handed over. How could it be any other way for billions to be controlled by a relative few? I have had experiences with people possessed by Wetiko and again you can kick its arse if you do it with an open heart. Oh yes – the *heart* which can transform the world of perceived 'matter'.

We are receiver-transmitters and processors of information, but what information and where from? Information is processed into perception in three main areas – the brain, the heart and the belly. These relate to thinking, knowing, and emotion. Wetiko wants us to be head and belly people which means we think within the confines of the Matrix simulation and low-vibrational emotional reaction scrambles balance and perception. A few minutes on social media and you see how emotion is the dominant force. Woke is all emotion and is therefore thought-free and fact-free. Our heart is something different. It *knows* while the head *thinks* and has to try to work it out because it doesn't know. The human energy field has seven prime vortexes which connect us with wider reality ([Fig 23](#)). Chakra means

‘wheels of light’ in the Sanskrit language of ancient India. The main ones are: The crown chakra on top of the head; brow (or ‘third eye’) chakra in the centre of the forehead; throat chakra; heart chakra in the centre of the chest; solar plexus chakra below the sternum; sacral chakra beneath the navel; and base chakra at the bottom of the spine. Each one has a particular function or functions. We feel anxiety and nervousness in the belly where the sacral chakra is located and this processes emotion that can affect the colon to give people ‘the shits’ or make them ‘shit scared’ when they are nervous. Chakras all play an important role, but the Mr and Mrs Big is the heart chakra which sits at the centre of the seven, above the chakras that connect us to the ‘physical’ and below those that connect with higher realms (or at least should). Here in the heart chakra we feel love, empathy and compassion – ‘My heart goes out to you’. Those with closed hearts become literally ‘heart-less’ in their attitudes and behaviour (see Bill Gates). Native Americans portrayed Wetiko with what Paul Levy calls a ‘frigid, icy heart, devoid of mercy’ (see Bill Gates).



Figure 23: The chakra system which interpenetrates the human energy field. The heart chakra is the governor – or should be.

Wetiko trembles at the thought of heart energy which it cannot infiltrate. The frequency is too high. What it seeks to do instead is close the heart chakra vortex to block its perceptual and energetic influence. Psychopaths have ‘hearts of stone’ and emotionally-damaged people have ‘heartache’ and ‘broken hearts’. The astonishing amount of heart disease is related to heart chakra

disruption with its fundamental connection to the 'physical' heart. Dr Tom Cowan has written an outstanding book challenging the belief that the heart is a pump and making the connection between the 'physical' and spiritual heart. Rudolph Steiner who was way ahead of his time said the same about the fallacy that the heart is a pump. *What?* The heart is not a pump? That's crazy, right? Everybody knows that. Read Cowan's *Human Heart, Cosmic Heart* and you will realise that the very idea of the heart as a pump is ridiculous when you see the evidence. How does blood in the feet so far from the heart get pumped horizontally up the body by the heart?? Cowan explains in the book the real reason why blood moves as it does. Our 'physical' heart is used to symbolise love when the source is really the heart vortex or spiritual heart which is our most powerful energetic connection to 'out there' expanded consciousness. That's why we feel *knowing* – intuitive knowing – in the centre of the chest. Knowing doesn't come from a process of thoughts leading to a conclusion. It is there in an instant all in one go. Our heart knows because of its connection to levels of awareness that *do* know. This is the meaning and source of intuition – intuitive *knowing*.

For the last more than 30 years of uncovering the global game and the nature of reality my heart has been my constant antenna for truth and accuracy. An American intelligence insider once said that I had quoted a disinformant in one of my books and yet I had only quoted the part that was true. He asked: 'How do you do that?' By using my heart antenna was the answer and anyone can do it. Heart-centred is how we are meant to be. With a closed heart chakra we withdraw into a closed mind and the bubble of five-sense reality. If you take a moment to focus your attention on the centre of your chest, picture a spinning wheel of light and see it opening and expanding. You will feel it happening, too, and perceptions of the heart like joy and love as the heart impacts on the mind as they interact. The more the chakra opens the more you will feel expressions of heart consciousness and as the process continues, and becomes part of you, insights and knowings will follow. An open

heart is connected to that level of awareness that knows all is *One*. You will see from its perspective that the fault-lines that divide us are only illusions to control us. An open heart does not process the illusions of race, creed and sexuality except as brief experiences for a consciousness that is all. Our heart does not see division, only unity (Figs 24 and 25). There's something else, too. Our hearts love to laugh. Mark Twain's quote that says 'The human race has one really effective weapon, and that is laughter' is really a reference to the heart which loves to laugh with the joy of knowing the true nature of infinite reality and that all the madness of human society is an illusion of the mind. Twain also said: 'Against the assault of laughter nothing can stand.' This is so true of Wetiko and the Cult. Their insecurity demands that they be taken seriously and their power and authority acknowledged and feared. We should do nothing of the sort. We should not get aggressive or fearful which their insecurity so desires. We should laugh in their face. Even in their no-face as police come over in their face-nappies and expect to be taken seriously. They don't take themselves seriously looking like that so why should we? Laugh in the face of intimidation. Laugh in the face of tyranny. You will see by its reaction that you have pressed all of its buttons. Wetiko does not know what to do in the face of laughter or when its targets refuse to concede their joy to fear. We have seen many examples during the 'Covid' hoax when people have expressed their energetic power and the string puppets of Wetiko retreat with their tail limp between their knees. Laugh – the world is bloody mad after all and if it's a choice between laughter and tears I know which way I'm going.



Figure 24: Head consciousness without the heart sees division and everything apart from everything else.



Figure 25: Heart consciousness sees everything as One.

'Vaccines' and the soul

The foundation of Wetiko/Archon control of humans is the separation of incarnate five-sense mind from the infinite 'I' and closing the heart chakra where the True 'I' lives during a human life. The goal has been to achieve complete separation in both cases. I was interested therefore to read an account by a French energetic healer of what she said she experienced with a patient who had been given the 'Covid' vaccine. Genuine energy healers can sense information and consciousness fields at different levels of being which are referred to as 'subtle bodies'. She described treating the patient who later returned after having, without the healer's knowledge, two doses of the 'Covid vaccine'. The healer said:

I noticed immediately the change, very heavy energy emanating from [the] subtle bodies. The scariest thing was when I was working on the heart chakra, I connected with her soul: it was detached from the physical body, it had no contact and it was, as if it was floating in a state of total confusion: a damage to the consciousness that loses contact with the physical body, i.e. with our biological machine, there is no longer any communication between them.

I continued the treatment by sending light to the heart chakra, the soul of the person, but it seemed that the soul could no longer receive any light, frequency or energy. It was a very powerful experience for me. Then I understood that this substance is indeed used to detach consciousness so that this consciousness can no longer interact through this body that it possesses in life, where there is no longer any contact, no frequency, no light, no more energetic balance or mind.

This would create a human that is rudderless and at the extreme almost zombie-like operating with a fractional state of consciousness at the mercy of Wetiko. I was especially intrigued by what the healer said in the light of the prediction by the highly-informed Rudolf Steiner more than a hundred years ago. He said:

In the future, we will eliminate the soul with medicine. Under the pretext of a 'healthy point of view', there will be a vaccine by which the human body will be treated as soon as possible directly at birth, so that the human being cannot develop the thought of the existence of soul and Spirit. To materialistic doctors will be entrusted the task of removing the soul of humanity.

As today, people are vaccinated against this disease or that disease, so in the future, children will be vaccinated with a substance that can be produced precisely in such a way that people, thanks to this vaccination, will be immune to being subjected to the 'madness' of spiritual life. He would be extremely smart, but he would not develop a conscience, and that is the true goal of some materialistic circles.

Steiner said the vaccine would detach the physical body from the etheric body (subtle bodies) and 'once the etheric body is detached the relationship between the universe and the etheric body would become extremely unstable, and man would become an automaton'. He said 'the physical body of man must be polished on this Earth by spiritual will – so the vaccine becomes a kind of arymanique (Wetiko) force' and 'man can no longer get rid of a given materialistic feeling'. Humans would then, he said, become 'materialistic of constitution and can no longer rise to the spiritual'. I have been writing for years about DNA being a receiver-transmitter of information that connects us to other levels of reality and these 'vaccines' changing DNA can be likened to changing an antenna and what it can transmit and receive. Such a disconnection would clearly lead to changes in personality and perception. Steiner further predicted the arrival of AI. Big Pharma 'Covid vaccine' makers, expressions of Wetiko, are testing their DNA-manipulating evil on children as I write with a view to giving the 'vaccine' to babies. If it's a soul-body disconnecter – and I say that it is or can be – every child would be disconnected from 'soul' at birth and the 'vaccine' would create a closed system in which spiritual guidance from the greater self would play no part. This has been the ambition of Wetiko all

along. A Pentagon video from 2005 was leaked of a presentation explaining the development of vaccines to change behaviour by their effect on the brain. Those that believe this is not happening with the 'Covid' genetically-modifying procedure masquerading as a 'vaccine' should make an urgent appointment with Naivety Anonymous. Klaus Schwab wrote in 2018:

Neurotechnologies enable us to better influence consciousness and thought and to understand many activities of the brain. They include decoding what we are thinking in fine levels of detail through new chemicals and interventions that can influence our brains to correct for errors or enhance functionality.

The plan is clear and only the heart can stop it. With every heart that opens, every mind that awakens, Wetiko is weakened. Heart and love are far more powerful than head and hate and so nothing like a majority is needed to turn this around.

Beyond the Phantom

Our heart is the prime target of Wetiko and so it must be the answer to Wetiko. We *are* our heart which is part of one heart, the infinite heart. Our heart is where the true self lives in a human life behind firewalls of five-sense illusion when an imposter takes its place – *Phantom Self*; but our heart waits patiently to be set free any time we choose to see beyond the Phantom, beyond Wetiko. A Wetikoed Phantom Self can wreak mass death and destruction while the love of forever is locked away in its heart. The time is here to unleash its power and let it sweep away the fear and despair that is Wetiko. Heart consciousness does not seek manipulated, censored, advantage for its belief or religion, its activism and desires. As an expression of the One it treats all as One with the same rights to freedom and opinion. Our heart demands fairness for itself no more than for others. From this unity of heart we can come together in mutual support and transform this Wetikoed world into what reality is meant to be – a place of love, joy, happiness, fairness, justice and freedom. Wetiko has another agenda and that's why the world is as

it is, but enough of this nonsense. Wetiko can't stay where hearts are open and it works so hard to keep them closed. Fear is its currency and its food source and love in its true sense has no fear. Why would love have fear when it knows it is *All That Is, Has Been, And Ever Can Be* on an eternal exploration of all possibility? Love in this true sense is not the physical attraction that passes for love. This can be an expression of it, yes, but Infinite Love, a love without condition, goes far deeper to the core of all being. It *is* the core of all being. Infinite reality was born from love beyond the illusions of the simulation. Love infinitely expressed is the knowing that all is One and the swiftly-passing experience of separation is a temporary hallucination. You cannot disconnect from Oneness; you can only *perceive* that you have and withdraw from its influence. This is the most important of all perception trickery by the mind parasite that is Wetiko and the foundation of all its potential for manipulation.

If we open our hearts, open the sluice gates of the mind, and redefine self-identity amazing things start to happen. Consciousness expands or contracts in accordance with self-identity. When true self is recognised as infinite awareness and label self – Phantom Self – is seen as only a series of brief experiences life is transformed. Consciousness expands to the extent that self-identity expands and everything changes. You see unity, not division, the picture, not the pixels. From this we can play the long game. No more is an experience something in and of itself, but a fleeting moment in the eternity of forever. Suddenly people in uniform and dark suits are no longer intimidating. Doing what your heart knows to be right is no longer intimidating and consequences for those actions take on the same nature of a brief experience that passes in the blink of an infinite eye. Intimidation is all in the mind. Beyond the mind there is no intimidation.

An open heart does not consider consequences for what it knows to be right. To do so would be to consider not doing what it knows to be right and for a heart in its power that is never an option. The Renegade Mind is really the Renegade Heart. Consideration of consequences will always provide a getaway car for the mind and

the heart doesn't want one. What is right in the light of what we face today is to stop cooperating with Wetiko in all its forms and to do it without fear or compromise. You cannot compromise with tyranny when tyranny always demands more until it has everything. Life is your perception and you are your destiny. Change your perception and you change your life. Change collective perception and we change the world.

Come on people ... One human family, One heart, One goal ...
FREEEEEEEDOM!

We must settle for nothing less.

Postscript

The big scare story as the book goes to press is the 'Indian' variant and the world is being deluged with propaganda about the 'Covid catastrophe' in India which mirrors in its lies and misrepresentations what happened in Italy before the first lockdown in 2020.

The *New York Post* published a picture of someone who had 'collapsed in the street from Covid' in India in April, 2021, which was actually taken during a gas leak in May, 2020. Same old, same old. Media articles in mid-February were asking why India had been so untouched by 'Covid' and then as their vaccine rollout gathered pace the alleged 'cases' began to rapidly increase. Indian 'Covid vaccine' maker Bharat Biotech was funded into existence by the Bill and Melinda Gates Foundation (the pair announced their divorce in May, 2021, which is a pity because they so deserve each other). The Indian 'Covid crisis' was ramped up by the media to terrify the world and prepare people for submission to still more restrictions. The scam that worked the first time was being repeated only with far more people seeing through the deceit. Davidicke.com and Ickonic.com have sought to tell the true story of what is happening by talking to people living through the Indian nightmare which has nothing to do with 'Covid'. We posted a letter from 'Alisha' in Pune who told a very different story to government and media mendacity. She said scenes of dying people and overwhelmed hospitals were designed to hide what was really happening – genocide and starvation. Alisha said that millions had already died of starvation during the ongoing lockdowns while government and media were lying and making it look like the 'virus':

Restaurants, shops, gyms, theatres, basically everything is shut. The cities are ghost towns. Even so-called 'essential' businesses are only open till 11am in the morning. You basically have just an hour to buy food and then your time is up.

Inter-state travel and even inter-district travel is banned. The cops wait at all major crossroads to question why you are traveling outdoors or to fine you if you are not wearing a mask.

The medical community here is also complicit in genocide, lying about hospitals being full and turning away people with genuine illnesses, who need immediate care. They have even created a shortage of oxygen cylinders.

This is the classic Cult modus operandi played out in every country. Alisha said that people who would not have a PCR test not testing for the 'virus' were being denied hospital treatment. She said the people hit hardest were migrant workers and those in rural areas. Most businesses employed migrant workers and with everything closed there were no jobs, no income and no food. As a result millions were dying of starvation or malnutrition. All this was happening under Prime Minister Narendra Modi, a 100-percent asset of the Cult, and it emphasises yet again the scale of pure anti-human evil we are dealing with. Australia banned its people from returning home from India with penalties for trying to do so of up to five years in jail and a fine of £37,000. The manufactured 'Covid' crisis in India was being prepared to justify further fascism in the West. Obvious connections could be seen between the Indian 'vaccine' programme and increased 'cases' and this became a common theme. The Seychelles, the most per capita 'Covid vaccinated' population in the world, went back into lockdown after a 'surge of cases'.

Long ago the truly evil Monsanto agricultural biotechnology corporation with its big connections to Bill Gates devastated Indian farming with genetically-modified crops. Human rights activist Gurcharan Singh highlighted the efforts by the Indian government to complete the job by destroying the food supply to hundreds of millions with 'Covid' lockdowns. He said that 415 million people at the bottom of the disgusting caste system (still going whatever they say) were below the poverty line and struggled to feed themselves every year. Now the government was imposing lockdown at just the

time to destroy the harvest. This deliberate policy was leading to mass starvation. People may reel back at the suggestion that a government would do that, but Wetiko-controlled 'leaders' are capable of any level of evil. In fact what is described in India is in the process of being instigated worldwide. The food chain and food supply are being targeted at every level to cause world hunger and thus control. Bill Gates is not the biggest owner of farmland in America for no reason and destroying access to food aids both the depopulation agenda and the plan for synthetic 'food' already being funded into existence by Gates. Add to this the coming hyper-inflation from the suicidal creation of fake 'money' in response to 'Covid' and the breakdown of container shipping systems and you have a cocktail that can only lead one way and is meant to. The Cult plan is to crash the entire system to 'build back better' with the Great Reset.

'Vaccine' transmission

Reports from all over the world continue to emerge of women suffering menstrual and fertility problems after having the fake 'vaccine' and of the non-'vaccinated' having similar problems when interacting with the 'vaccinated'. There are far too many for 'coincidence' to be credible. We've had menopausal women getting periods, others having periods stop or not stopping for weeks, passing clots, sometimes the lining of the uterus, breast irregularities, and miscarriages (which increased by 400 percent in parts of the United States). Non-'vaccinated' men and children have suffered blood clots and nose bleeding after interaction with the 'vaccinated'. Babies have died from the effects of breast milk from a 'vaccinated' mother. Awake doctors – the small minority – speculated on the cause of non-'vaccinated' suffering the same effects as the 'vaccinated'. Was it nanotechnology in the synthetic substance transmitting frequencies or was it a straight chemical bioweapon that was being transmitted between people? I am not saying that some kind of chemical transmission is not one possible answer, but the foundation of all that the Cult does is frequency and

this is fertile ground for understanding how transmission can happen. American doctor Carrie Madej, an internal medicine physician and osteopath, has been practicing for the last 20 years, teaching medical students, and she says attending different meetings where the agenda for humanity was discussed. Madej, who operates out of Georgia, did not dismiss other possible forms of transmission, but she focused on frequency in search of an explanation for transmission. She said the Moderna and Pfizer 'vaccines' contained nano-lipid particles as a key component. This was a brand new technology never before used on humanity. 'They're using a nanotechnology which is pretty much little tiny computer bits ... nanobots or hydrogel.' Inside the 'vaccines' was 'this sci-fi kind of substance' which suppressed immune checkpoints to get into the cell. I referred to this earlier as the 'Trojan horse' technique that tricks the cell into opening a gateway for the self-replicating synthetic material and while the immune system is artificially suppressed the body has no defences. Madej said the substance served many purposes including an on-demand ability to 'deliver the payload' and using the nano 'computer bits' as biosensors in the body. 'It actually has the ability to accumulate data from your body, like your breathing, your respiration, thoughts, emotions, all kinds of things.'

She said the technology obviously has the ability to operate through Wi-Fi and transmit and receive energy, messages, frequencies or impulses. 'Just imagine you're getting this new substance in you and it can react to things all around you, the 5G, your smart device, your phones.' We had something completely foreign in the human body that had never been launched large scale at a time when we were seeing 5G going into schools and hospitals (plus the Musk satellites) and she believed the 'vaccine' transmission had something to do with this: '... if these people have this inside of them ... it can act like an antenna and actually transmit it outwardly as well.' The synthetic substance produced its own voltage and so it could have that kind of effect. This fits with my own contention that the nano receiver-transmitters are designed to connect people to the

Smart Grid and break the receiver-transmitter connection to expanded consciousness. That would explain the French energy healer's experience of the disconnection of body from 'soul' with those who have had the 'vaccine'. The nanobots, self-replicating inside the body, would also transmit the synthetic frequency which could be picked up through close interaction by those who have not been 'vaccinated'. Madej speculated that perhaps it was 5G and increased levels of other radiation that was causing the symptoms directly although interestingly she said that non-'vaccinated' patients had shown improvement when they were away from the 'vaccinated' person they had interacted with. It must be remembered that you can control frequency and energy with your mind and you can consciously create energetic barriers or bubbles with the mind to stop damaging frequencies from penetrating your field. American paediatrician Dr Larry Palevsky said the 'vaccine' was not a 'vaccine' and was never designed to protect from a 'viral' infection. He called it 'a massive, brilliant propaganda of genocide' because they didn't have to inject everyone to get the result they wanted. He said the content of the jabs was able to infuse any material into the brain, heart, lungs, kidneys, liver, sperm and female productive system. 'This is genocide; this is a weapon of mass destruction.' At the same time American colleges were banning students from attending if they didn't have this life-changing and potentially life-ending 'vaccine'. Class action lawsuits must follow when the consequences of this college fascism come to light. As the book was going to press came reports about fertility effects on sperm in 'vaccinated' men which would absolutely fit with what I have been saying and hospitals continued to fill with 'vaccine' reactions. Another question is what about transmission via blood transfusions? The NHS has extended blood donation restrictions from seven days after a 'Covid vaccination' to 28 days after even a sore arm reaction.

I said in the spring of 2020 that the then touted 'Covid vaccine' would be ongoing each year like the flu jab. A year later Pfizer CEO, the appalling Albert Bourla, said people would 'likely' need a 'booster dose' of the 'vaccine' within 12 months of getting 'fully

vaccinated' and then a yearly shot. 'Variants will play a key role', he said confirming the point. Johnson & Johnson CEO Alex Gorsky also took time out from his 'vaccine' disaster to say that people may need to be vaccinated against 'Covid-19' each year. UK Health Secretary, the psychopath Matt Hancock, said additional 'boosters' would be available in the autumn of 2021. This is the trap of the 'vaccine passport'. The public will have to accept every last 'vaccine' they introduce, including for the fake 'variants', or it would cease to be valid. The only other way in some cases would be continuous testing with a test not testing for the 'virus' and what is on the swabs constantly pushed up your nose towards the brain every time?

'Vaccines' changing behaviour

I mentioned in the body of the book how I believed we would see gathering behaviour changes in the 'vaccinated' and I am already hearing such comments from the non-'vaccinated' describing behaviour changes in friends, loved ones and work colleagues. This will only increase as the self-replicating synthetic material and nanoparticles expand in body and brain. An article in the *Guardian* in 2016 detailed research at the University of Virginia in Charlottesville which developed a new method for controlling brain circuits associated with complex animal behaviour. The method, dubbed 'magnetogenetics', involves genetically-engineering a protein called ferritin, which stores and releases iron, to create a magnetised substance – 'Magneto' – that can activate specific groups of nerve cells from a distance. This is claimed to be an advance on other methods of brain activity manipulation known as optogenetics and chemogenetics (the Cult has been developing methods of brain control for a long time). The ferritin technique is said to be non-invasive and able to activate neurons 'rapidly and reversibly'. In other words, human thought and perception. The article said that earlier studies revealed how nerve cell proteins 'activated by heat and mechanical pressure can be genetically engineered so that they become sensitive to radio waves and magnetic fields, by attaching them to an iron-storing protein called ferritin, or to inorganic

paramagnetic particles'. Sensitive to radio waves and magnetic fields? You mean like 5G, 6G and 7G? This is the human-AI Smart Grid hive mind we are talking about. The *Guardian* article said:

... the researchers injected Magneto into the striatum of freely behaving mice, a deep brain structure containing dopamine-producing neurons that are involved in reward and motivation, and then placed the animals into an apparatus split into magnetised and non-magnetised sections.

Mice expressing Magneto spent far more time in the magnetised areas than mice that did not, because activation of the protein caused the striatal neurons expressing it to release dopamine, so that the mice found being in those areas rewarding. This shows that Magneto can remotely control the firing of neurons deep within the brain, and also control complex behaviours.

Make no mistake this basic methodology will be part of the 'Covid vaccine' cocktail and using magnetics to change brain function through electromagnetic field frequency activation. The Pentagon is developing a 'Covid vaccine' using ferritin. Magnetism would explain changes in behaviour and why videos are appearing across the Internet as I write showing how magnets stick to the skin at the point of the 'vaccine' shot. Once people take these 'vaccines' anything becomes possible in terms of brain function and illness which will be blamed on 'Covid-19' and 'variants'. Magnetic field manipulation would further explain why the non-'vaccinated' are reporting the same symptoms as the 'vaccinated' they interact with and why those symptoms are reported to decrease when not in their company. Interestingly 'Magneto', a 'mutant', is a character in the Marvel Comic *X-Men* stories with the ability to manipulate magnetic fields and he believes that mutants should fight back against their human oppressors by any means necessary. The character was born Erik Lehnsherr to a Jewish family in Germany.

Cult-controlled courts

The European Court of Human Rights opened the door for mandatory 'Covid-19 vaccines' across the continent when it ruled in a Czech Republic dispute over childhood immunisation that legally

enforced vaccination could be 'necessary in a democratic society'. The 17 judges decided that compulsory vaccinations did not breach human rights law. On the face of it the judgement was so inverted you gasp for air. If not having a vaccine infused into your body is not a human right then what is? Ah, but they said human rights law which has been specifically written to delete all human rights at the behest of the state (the Cult). Article 8 of the European Convention on Human Rights relates to the right to a private life. The crucial word here is '*except*':

There shall be no interference by a public authority with the exercise of this right EXCEPT such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic wellbeing of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others [My emphasis].

No interference *except* in accordance with the law means there *are* no 'human rights' *except* what EU governments decide you can have at their behest. 'As is necessary in a democratic society' explains that reference in the judgement and 'in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others' gives the EU a coach and horses to ride through 'human rights' and scatter them in all directions. The judiciary is not a check and balance on government extremism; it is a vehicle to enforce it. This judgement was almost laughably predictable when the last thing the Cult wanted was a decision that went against mandatory vaccination. Judges rule over and over again to benefit the system of which they are a part. Vaccination disputes that come before them are invariably delivered in favour of doctors and authorities representing the view of the state which owns the judiciary. Oh, yes, and we have even had calls to stop putting 'Covid-19' on death certificates within 28 days of a 'positive test' because it is claimed the practice makes the 'vaccine' appear not to work. They are laughing at you.

The scale of madness, inhumanity and things to come was highlighted when those not 'vaccinated' for 'Covid' were refused evacuation from the Caribbean island of St Vincent during massive volcanic eruptions. Cruise ships taking residents to the safety of another island allowed only the 'vaccinated' to board and the rest were left to their fate. Even in life and death situations like this we see 'Covid' stripping people of their most basic human instincts and the insanity is even more extreme when you think that fake 'vaccine'-makers are not even claiming their body-manipulating concoctions stop 'infection' and 'transmission' of a 'virus' that doesn't exist. St Vincent Prime Minister Ralph Gonsalves said: 'The chief medical officer will be identifying the persons already vaccinated so that we can get them on the ship.' Note again the power of the chief medical officer who, like Whitty in the UK, will be answering to the World Health Organization. This is the Cult network structure that has overridden politicians who 'follow the science' which means doing what WHO-controlled 'medical officers' and 'science advisers' tell them. Gonsalves even said that residents who were 'vaccinated' after the order so they could board the ships would still be refused entry due to possible side effects such as 'wooziness in the head'. The good news is that if they were woozy enough in the head they could qualify to be prime minister of St Vincent.

Microchipping freedom

The European judgement will be used at some point to justify moves to enforce the 'Covid' DNA-manipulating procedure. Sandra Ro, CEO of the Global Blockchain Business Council, told a World Economic Forum event that she hoped 'vaccine passports' would help to 'drive forced consent and standardisation' of global digital identity schemes: 'I'm hoping with the desire and global demand for some sort of vaccine passport – so that people can get travelling and working again – [it] will drive forced consent, standardisation, and frankly, cooperation across the world.' The lady is either not very bright, or thoroughly mendacious, to use the term 'forced consent'.

You do not 'consent' if you are forced – you *submit*. She was describing what the plan has been all along and that's to enforce a digital identity on every human without which they could not function. 'Vaccine passports' are opening the door and are far from the end goal. A digital identity would allow you to be tracked in everything you do in cyberspace and this is the same technique used by Cult-owned China to enforce its social credit system of total control. The ultimate 'passport' is planned to be a microchip as my books have warned for nearly 30 years. Those nice people at the Pentagon working for the Cult-controlled Defense Advanced Research Projects Agency (DARPA) claimed in April, 2021, they have developed a microchip inserted under the skin to detect 'asymptomatic Covid-19 infection' before it becomes an outbreak and a 'revolutionary filter' that can remove the 'virus' from the blood when attached to a dialysis machine. The only problems with this are that the 'virus' does not exist and people transmitting the 'virus' with no symptoms is brain-numbing bullshit. This is, of course, not a ruse to get people to be microchipped for very different reasons. DARPA also said it was producing a one-stop 'vaccine' for the 'virus' and all 'variants'. One of the most sinister organisations on Planet Earth is doing this? Better have it then. These people are insane because Wetiko that possesses them is insane.

Researchers from the Salk Institute in California announced they have created an embryo that is part human and part monkey. My books going back to the 1990s have exposed experiments in top secret underground facilities in the United States where humans are being crossed with animal and non-human 'extraterrestrial' species. They are now easing that long-developed capability into the public arena and there is much more to come given we are dealing with psychiatric basket cases. Talking of which – Elon Musk's scientists at Neuralink trained a monkey to play Pong and other puzzles on a computer screen using a joystick and when the monkey made the correct move a metal tube squirted banana smoothie into his mouth which is the basic technique for training humans into unquestioning compliance. Two Neuralink chips were in the monkey's skull and

more than 2,000 wires 'fanned out' into its brain. Eventually the monkey played a video game purely with its brain waves. Psychopathic narcissist Musk said the 'breakthrough' was a step towards putting Neuralink chips into human skulls and merging minds with artificial intelligence. *Exactly*. This man is so dark and Cult to his DNA.

World Economic Fascism (WEF)

The World Economic Forum is telling you the plan by the statements made at its many and various events. Cult-owned fascist YouTube CEO Susan Wojcicki spoke at the 2021 WEF Global Technology Governance Summit (see the name) in which 40 governments and 150 companies met to ensure 'the responsible design and deployment of emerging technologies'. Orwellian translation: 'Ensuring the design and deployment of long-planned technologies will advance the Cult agenda for control and censorship.' Freedom-destroyer and Nuremberg-bound Wojcicki expressed support for tech platforms like hers to censor content that is 'technically legal but could be harmful'. Who decides what is 'harmful'? She does and they do. 'Harmful' will be whatever the Cult doesn't want people to see and we have legislation proposed by the UK government that would censor content on the basis of 'harm' no matter if the information is fair, legal and provably true. Make that *especially* if it is fair, legal and provably true. Wojcicki called for a global coalition to be formed to enforce content moderation standards through automated censorship. This is a woman and mega-censor so self-deluded that she shamelessly accepted a 'free expression' award – *Wojcicki* – in an event sponsored by her own *YouTube*. They have no shame and no self-awareness.

You know that 'Covid' is a scam and Wojcicki a Cult operative when YouTube is censoring medical and scientific opinion purely on the grounds of whether it supports or opposes the Cult 'Covid' narrative. Florida governor Ron DeSantis compiled an expert panel with four professors of medicine from Harvard, Oxford, and Stanford Universities who spoke against forcing children and

vaccinated people to wear masks. They also said there was no proof that lockdowns reduced spread or death rates of 'Covid-19'. Cult-gofer Wojcicki and her YouTube deleted the panel video 'because it included content that contradicts the consensus of local and global health authorities regarding the efficacy of masks to prevent the spread of Covid-19'. This 'consensus' refers to what the Cult tells the World Health Organization to say and the WHO tells 'local health authorities' to do. Wojcicki knows this, of course. The panellists pointed out that censorship of scientific debate was responsible for deaths from many causes, but Wojcicki couldn't care less. She would not dare go against what she is told and as a disgrace to humanity she wouldn't want to anyway. The UK government is seeking to pass a fascist 'Online Safety Bill' to specifically target with massive fines and other means non-censored video and social media platforms to make them censor 'lawful but harmful' content like the Cult-owned Facebook, Twitter, Google and YouTube. What is 'lawful but harmful' would be decided by the fascist Blair-created Ofcom.

Another WEF obsession is a cyber-attack on the financial system and this is clearly what the Cult has planned to take down the bank accounts of everyone – except theirs. Those that think they have enough money for the Cult agenda not to matter to them have got a big lesson coming if they continue to ignore what is staring them in the face. The World Economic Forum, funded by Gates and fronted by Klaus Schwab, announced it would be running a 'simulation' with the Russian government and global banks of just such an attack called Cyber Polygon 2021. What they simulate – as with the 'Covid' Event 201 – they plan to instigate. The WEF is involved in a project with the Cult-owned Carnegie Endowment for International Peace called the WEF-Carnegie Cyber Policy Initiative which seeks to merge Wall Street banks, 'regulators' (I love it) and intelligence agencies to 'prevent' (arrange and allow) a cyber-attack that would bring down the global financial system as long planned by those that control the WEF and the Carnegie operation. The Carnegie Endowment for International Peace sent an instruction to First World

War US President Woodrow Wilson not to let the war end before society had been irreversibly transformed.

The Wuhan lab diversion

As I close, the Cult-controlled authorities and lapdog media are systematically pushing 'the virus was released from the Wuhan lab' narrative. There are two versions – it happened by accident and it happened on purpose. Both are nonsense. The perceived existence of the never-shown-to-exist 'virus' is vital to sell the impression that there is actually an infective agent to deal with and to allow the endless potential for terrifying the population with 'variants' of a 'virus' that does not exist. The authorities at the time of writing are going with the 'by accident' while the alternative media is promoting the 'on purpose'. Cable news host Tucker Carlson who has questioned aspects of lockdown and 'vaccine' compulsion has bought the Wuhan lab story. 'Everyone now agrees' he said. Well, I don't and many others don't and the question is *why* does the system and its media suddenly 'agree'? When the media moves as one unit with a narrative it is always a lie – witness the hour by hour mendacity of the 'Covid' era. Why would this Cult-owned combination which has unleashed lies like machine gun fire suddenly 'agree' to tell the truth??

Much of the alternative media is buying the lie because it fits the conspiracy narrative, but it's the *wrong* conspiracy. The real conspiracy is that *there is no virus* and that is what the Cult is desperate to hide. The idea that the 'virus' was released by accident is ludicrous when the whole 'Covid' hoax was clearly long-planned and waiting to be played out as it was so fast in accordance with the Rockefeller document and Event 201. So they prepared everything in detail over decades and then sat around strumming their fingers waiting for an 'accidental' release from a bio-lab? *What??* It's crazy. Then there's the 'on purpose' claim. You want to circulate a 'deadly virus' and hide the fact that you've done so and you release it down the street from the highest-level bio-lab in China? I repeat – *What??*

You would release it far from that lab to stop any association being made. But, no, we'll do it in a place where the connection was certain to be made. Why would you need to scam 'cases' and 'deaths' and pay hospitals to diagnose 'Covid-19' if you had a real 'virus'? What are sections of the alternative media doing believing this crap? Where were all the mass deaths in Wuhan from a 'deadly pathogen' when the recovery to normal life after the initial propaganda was dramatic in speed? Why isn't the 'deadly pathogen' now circulating all over China with bodies in the street? Once again we have the technique of tell them what they want to hear and they will likely believe it. The alternative media has its 'conspiracy' and with Carlson it fits with his 'China is the danger' narrative over years. China *is* a danger as a global Cult operations centre, but not for this reason. The Wuhan lab story also has the potential to instigate conflict with China when at some stage the plan is to trigger a Problem-Reaction-Solution confrontation with the West. Question everything – *everything* – and especially when the media agrees on a common party line.

Third wave ... fourth wave ... fifth wave ...

As the book went into production the world was being set up for more lockdowns and a 'third wave' supported by invented 'variants' that were increasing all the time and will continue to do so in public statements and computer programs, but not in reality. India became the new Italy in the 'Covid' propaganda campaign and we were told to be frightened of the new 'Indian strain'. Somehow I couldn't find it within myself to do so. A document produced for the UK government entitled 'Summary of further modelling of easing of restrictions – Roadmap Step 2' declared that a third wave was inevitable (of course when it's in the script) and it would be the fault of children and those who refuse the health-destroying fake 'Covid vaccine'. One of the computer models involved came from the Cult-owned *Imperial College* and the other from Warwick University which I wouldn't trust to tell me the date in a calendar factory. The document states that both models presumed extremely high uptake

of the 'Covid vaccines' and didn't allow for 'variants'. The document states: 'The resurgence is a result of some people (mostly children) being ineligible for vaccination; others choosing not to receive the vaccine; and others being vaccinated but not perfectly protected.' The mendacity takes the breath away. Okay, blame those with a brain who won't take the DNA-modifying shots and put more pressure on children to have it as 'trials' were underway involving children as young as six months with parents who give insanity a bad name. Massive pressure is being put on the young to have the fake 'vaccine' and child age consent limits have been systematically lowered around the world to stop parents intervening. Most extraordinary about the document was its claim that the 'third wave' would be driven by 'the resurgence in both hospitalisations and deaths ... dominated by *those that have received two doses of the vaccine*, comprising around 60-70% of the wave respectively'. The predicted peak of the 'third wave' suggested 300 deaths per day with 250 of them *fully 'vaccinated' people*. How many more lies do acquiescers need to be told before they see the obvious? Those who took the jab to 'protect themselves' are projected to be those who mostly get sick and die? So what's in the 'vaccine'? The document went on:

It is possible that a summer of low prevalence could be followed by substantial increases in incidence over the following autumn and winter. Low prevalence in late summer should not be taken as an indication that SARS-CoV-2 has retreated or that the population has high enough levels of immunity to prevent another wave.

They are telling you the script and while many British people believed 'Covid' restrictions would end in the summer of 2021 the government was preparing for them to be ongoing. Authorities were awarding contracts for 'Covid marshals' to police the restrictions with contracts starting in July, 2021, and going through to January 31st, 2022, and the government was advertising for 'Media Buying Services' to secure media propaganda slots worth a potential £320 million for 'Covid-19 campaigns' with a contract not ending until March, 2022. The recipient – via a list of other front companies – was reported to be American media marketing giant Omnicom Group

Inc. While money is no object for 'Covid' the UK waiting list for all other treatment – including life-threatening conditions – passed 4.5 million. Meantime the Cult is seeking to control all official 'inquiries' to block revelations about what has really been happening and why. It must not be allowed to – we need Nuremberg jury trials in every country. The cover-up doesn't get more obvious than appointing ultra-Zionist professor Philip Zelikow to oversee two dozen US virologists, public health officials, clinicians, former government officials and four American 'charitable foundations' to 'learn the lessons' of the 'Covid' debacle. The personnel will be those that created and perpetuated the 'Covid' lies while Zelikow is the former executive director of the 9/11 Commission who ensured that the truth about those attacks never came out and produced a report that must be among the most mendacious and manipulative documents ever written – see *The Trigger* for the detailed exposure of the almost unimaginable 9/11 story in which Sabbatians can be found at every level.

Passive no more

People are increasingly challenging the authorities with amazing numbers of people taking to the streets in London well beyond the ability of the Face-Nappies to stop them. Instead the Nappies choose situations away from the mass crowds to target, intimidate, and seek to promote the impression of 'violent protestors'. One such incident happened in London's Hyde Park. Hundreds of thousands walking through the streets in protest against 'Covid' fascism were ignored by the Cult-owned BBC and most of the rest of the mainstream media, but they delighted in reporting how police were injured in 'clashes with protestors'. The truth was that a group of people gathered in Hyde Park at the end of one march when most had gone home and they were peacefully having a good time with music and chat. Face-Nappies who couldn't deal with the full-march crowd then waded in with their batons and got more than they bargained for. Instead of just standing for this criminal brutality the crowd used their numerical superiority to push the Face-Nappies out of the

park. Eventually the Nappies turned and ran. Unfortunately two or three idiots in the crowd threw drink cans striking two officers which gave the media and the government the image they wanted to discredit the 99.9999 percent who were peaceful. The idiots walked straight into the trap and we must always be aware of potential agent provocateurs used by the authorities to discredit their targets.

This response from the crowd – the can people apart – must be a turning point when the public no longer stand by while the innocent are arrested and brutally attacked by the Face-Nappies. That doesn't mean to be violent, that's the last thing we need. We'll leave the violence to the Face-Nappies and government. But it does mean that when the Face-Nappies use violence against peaceful people the numerical superiority is employed to stop them and make citizen's arrests or Common Law arrests for a breach of the peace. The time for being passive in the face of fascism is over.

We are the many, they are the few, and we need to make that count before there is no freedom left and our children and grandchildren face an ongoing fascist nightmare.

COME ON PEOPLE – IT'S TIME.

One final thought ...

The power of love
A force from above
Cleaning my soul
Flame on burn desire
Love with tongues of fire
Purge the soul
Make love your goal

I'll protect you from the hooded claw
Keep the vampires from your door
When the chips are down I'll be around
With my undying, death-defying
Love for you

Envy will hurt itself
Let yourself be beautiful
Sparkling love, flowers
And pearls and pretty girls
Love is like an energy
Rushin' rushin' inside of me

This time we go sublime
Lovers entwine, divine, divine,
Love is danger, love is pleasure
Love is pure – the only treasure

I'm so in love with you
Purge the soul
Make love your goal

The power of love
A force from above
Cleaning my soul
The power of love
A force from above
A sky-scraping dove

Flame on burn desire
Love with tongues of fire
Purge the soul
Make love your goal

Frankie Goes To Hollywood

APPENDIX

Cowan-Kaufman-Morell Statement on Virus Isolation (SOVI)

Isolation: The action of isolating; the fact or condition of being isolated or standing alone; separation from other things or persons; solitariness

Oxford English Dictionary

The controversy over whether the SARS-CoV-2 virus has ever been isolated or purified continues. However, using the above definition, common sense, the laws of logic and the dictates of science, any unbiased person must come to the conclusion that the SARS-CoV-2 virus has never been isolated or purified. As a result, no confirmation of the virus' existence can be found. The logical, common sense, and scientific consequences of this fact are:

- the structure and composition of something not shown to exist can't be known, including the presence, structure, and function of any hypothetical spike or other proteins;
- the genetic sequence of something that has never been found can't be known;
- "variants" of something that hasn't been shown to exist can't be known;
- it's impossible to demonstrate that SARS-CoV-2 causes a disease called Covid-19.

In as concise terms as possible, here's the proper way to isolate, characterize and demonstrate a new virus. First, one takes samples (blood, sputum, secretions) from many people (e.g. 500) with symptoms which are unique and specific enough to characterize an illness. Without mixing these samples with ANY tissue or products that also contain genetic material, the virologist macerates, filters and ultracentrifuges i.e. *purifies* the specimen. This common virology technique, done for decades to isolate bacteriophages¹ and so-called giant viruses in every virology lab, then allows the virologist to demonstrate with electron microscopy thousands of identically sized and shaped particles. These particles are the isolated and purified virus.

These identical particles are then checked for uniformity by physical and/or microscopic techniques. Once the purity is determined, the particles may be further characterized. This would include examining the structure, morphology, and chemical composition of the particles. Next, their genetic makeup is characterized by extracting the genetic material directly from the purified particles and using genetic-sequencing techniques, such as Sanger sequencing, that have also been around for decades. Then one does an analysis to confirm that these uniform particles are exogenous (outside) in origin as a virus is conceptualized to be, and not the normal breakdown products of dead and dying tissues.² (As of May 2020, we know that virologists have no way to determine whether the particles they're seeing are viruses or just normal breakdown products of dead and dying tissues.)³

1 Isolation, characterization and analysis of bacteriophages from the haloalkaline lake Elmenteita, Kenya Julia Khayeli Akhwale et al, PLOS One, Published: April 25, 2019.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0215734> – accessed 2/15/21

2 "Extracellular Vesicles Derived From Apoptotic Cells: An Essential Link Between Death and Regeneration," Maojiao Li et al, Frontiers in Cell and Developmental Biology, 2020 October 2.
<https://www.frontiersin.org/articles/10.3389/fcell.2020.573511/full> – accessed 2/15/21

If we have come this far then we have fully isolated, characterized, and genetically sequenced an exogenous virus particle. However, we still have to show it is causally related to a disease. This is carried out by exposing a group of healthy subjects (animals are usually used) to this isolated, purified virus in the manner in which the disease is thought to be transmitted. If the animals get sick with the same disease, as confirmed by clinical and autopsy findings, one has now shown that the virus actually causes a disease. This demonstrates infectivity and transmission of an infectious agent.

None of these steps has even been attempted with the SARS-CoV-2 virus, nor have all these steps been successfully performed for any so-called pathogenic virus. Our research indicates that a single study showing these steps does not exist in the medical literature.

Instead, since 1954, virologists have taken unpurified samples from a relatively few people, often less than ten, with a similar disease. They then minimally process this sample and inoculate this unpurified sample onto tissue culture containing usually four to six other types of material – all of which contain identical genetic material as to what is called a “virus.” The tissue culture is starved and poisoned and naturally disintegrates into many types of particles, some of which contain genetic material. Against all common sense, logic, use of the English language and scientific integrity, this process is called “virus isolation.” This brew containing fragments of genetic material from many sources is then subjected to genetic analysis, which then creates in a computer-simulation process the alleged sequence of the alleged virus, a so called in silico genome. At no time is an actual virus confirmed by electron microscopy. At no time is a genome extracted and sequenced from an actual virus. This is scientific fraud.

The observation that the unpurified specimen — inoculated onto tissue culture along with toxic antibiotics, bovine fetal tissue, amniotic fluid and other tissues — destroys the kidney tissue onto which it is inoculated is given as evidence of the virus' existence and pathogenicity. This is scientific fraud.

From now on, when anyone gives you a paper that suggests the SARS-CoV-2 virus has been isolated, please check the methods sections. If the researchers used Vero cells or any other culture method, you know that their process was not isolation. You will hear the following excuses for why actual isolation isn't done:

1. There were not enough virus particles found in samples from patients to analyze.
2. Viruses are intracellular parasites; they can't be found outside the cell in this manner.

If No. 1 is correct, and we can't find the virus in the sputum of sick people, then on what evidence do we think the virus is dangerous or even lethal? If No. 2 is correct, then how is the virus spread from person to person? We are told it emerges from the cell to infect others. Then why isn't it possible to find it?

Finally, questioning these virology techniques and conclusions is not some distraction or divisive issue. Shining the light on this truth is essential to stop this terrible fraud that humanity is confronting. For, as we now know, if the virus has never been isolated, sequenced or shown to cause illness, if the virus is imaginary, then why are we wearing masks, social distancing and putting the whole world into prison?

Finally, if pathogenic viruses don't exist, then what is going into those injectable devices erroneously called "vaccines," and what is their purpose? This scientific question is the most urgent and relevant one of our time.

We are correct. The SARS-CoV2 virus does not exist.

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Ickonic is something that has been a dream of mine for the last 5 years, growing up around alternative information I have always had a natural interest in what is going on in the World and what could I do to make it better.

Across the range of subjects and positions of influence occupied mainly by people who don't strive to make things better it's the Media that I have always found the most frustrating and fascinating. Mainly because if the Media did their Jobs properly then so much of the negative things happening in the World simply would not be able to happen, because they would be exposed within a heartbeat.

Free Press and the Opportunities that the internet could have given would mean that the Media are able to expose things like never before and hold people to account for their actions. As we all know there are 'Untouchables' that walk among us, people the Media simply won't touch, expose or investigate and that leads to the dark underworlds that infest the establishment the World over. Well I say enough, it's time for something different, a different kind of Media, where no one is off limits from exposing and investigating. All we're interested in at Ickonic is the truth of what is really going on in the World on whichever subject we're covering.

We hope you enjoy what we have created and take something away from the platform, we aim to deliver information that's informative and most importantly self-empowering, you're not a little person, you're part of something much bigger than that and its time we as a collective race began to understand that and look to the future as ours to take.

It's time...

Jaymie Icke - Founder Ickonic Alternative Media.

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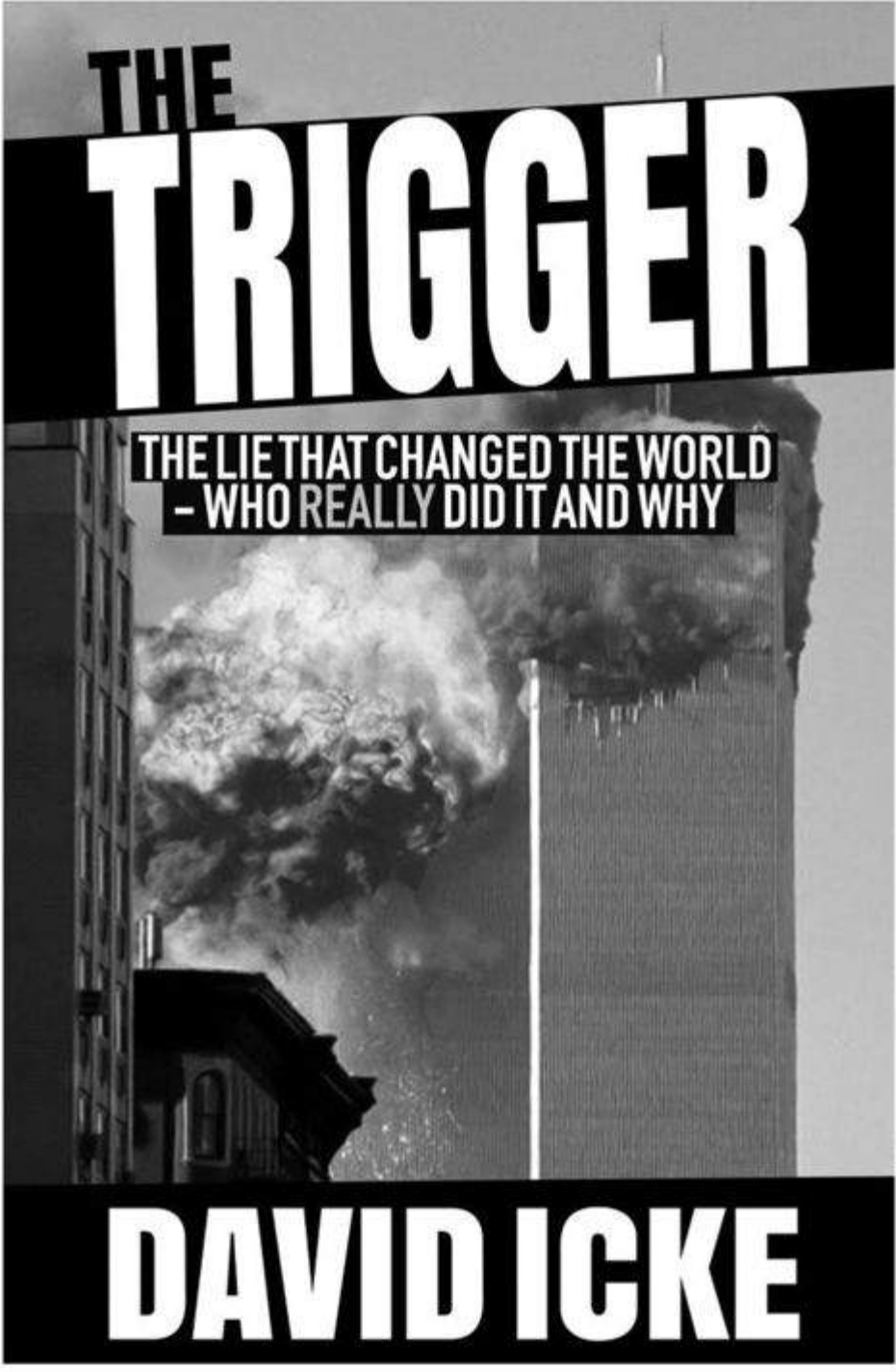
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/ren·i·geɪd/

noun

A person who behaves in a rebelliously unconventional manner.



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